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northern birds were very abundant. As yet, the bird alluded to has not been ascertained to be accompanied by other species, but is more abundant than during its visit in 1836-7. During an excursion in New Jersey, a few miles from Philadelphia, Mr. C. stated that he saw not only boys shooting crossbills in large numbers, but killing them with stones, which their frequenting low pine trees, and their apparent entire want of acquaintance with danger, rendered not difficult. They, in fact, manifest the utmost simplicity of habits, showing even no signs of alarm at the report of the gun, and continue quietly searching for food without regarding the death of their companions.

A collector of this city recently shot seventy-eight specimens in the course of one morning, and Mr. Drexler, lately employed by the Academy as taxidermist, shot twenty-seven specimens this day. It would appear from the unsuspicious manners of these birds that they have migrated from regions not settled by the white races of men, and their appearance here in such large numbers may be considered as demonstrative that the winter in the north either commenced unusually early, thus preventing the maturity of the buds on which they subsist, or that it has been of great severity.

December 26th.

Vice-President BRIDGES in the Chair.

The Committees on papers by Mr. Joseph Jones, of Georgia, read October 25th; by Dr. Leidy, read Dec. 5th; by Dr. Le Conte, read Dec. 12th and 19th; by Mr. Girard, read Dec. 12th; by Mr. Cassin, read Dec. 19th; by Dr. Genth, read same date; by Dr. Wetherill, read same date; and by Mr. Isaac Lea, read Feb. 7th, 1854, severally reported in favor of publication in the Proceedings.

An Abstract of Experiments upon the Physical Influences exerted by Living Organic, and Inorganic, Membranes, upon Chemical Substances passing through them by Endosmose.

By JOSEPH JONES.

The phenomenon of endosmose is coeval with that of life. All organized beings spring from organic cells. Each cell is a chemical laboratory; the materials for its nutrition, growth, and elaboration all pass through its walls by endosmose. What is true of the organic cell, is also true of every living organism, however simple or complex, because all its acts of nutrition, secretion, and growth, are carried on by organic cells. These facts show the important bearing of endosmose upon physiology and pathology, and demonstrate the absolute necessity of studying and understanding its phenomena, and developing, as far as possible, all its physical laws.

A true knowledge of these can only be gained by careful, laborious, and numerous experiments.

Experiments upon Living Animals, showing that their Membranes exert a Physical Influence capable of changing the molecular arrangement of Chemical Substances in solution, passing through them by Endosmose.

Immersed the belly and lower extremities of a large spring-frog, in a strong solution of the chloride of calcium, and allowed it to remain for an hour; then washing it carefully with water, immersed its lower extremities in a strong solution of the oxalate of ammonia. It remained in this solution for one hour,

when it was again carefully washed and placed in the solution of the chloride of calcium, where it remained for a similar length of time. Finally, it was removed from this, back to the solution of the oxalate of ammonia.

During the course of the experiment, which lasted four hours, the frog gradually became weaker and more inactive, and finally died in the solution of the oxalate of ammonia in which it was last placed. The specific gravity of the solution of the oxalate of ammonia was much less than that of the chloride of calcium, consequently the object in moving the frog from one solution to another, was to obtain as large a deposit of the oxalate of lime within its blood-vessels and tissues as possible, by promoting the actions of imbibition, endosmose, and exosmose.

As a general rule, the rapidity of the action of endosmose is proportional to the difference of the densities of the exterior and interior fluids. The effects of this action, or rather of the membranes, upon the chemical substances passing through, will be manifested by the change of physical form exhibited by the precipitate of the oxalate of lime.

Immediately after the frog had been removed from the solution of the oxalate of ammonia, an incision was made below and to the side of its sternum, into the cavity of the thorax and abdomen. The heart was found still pulsating. The blood-vessels beneath the skin, upon the surface of the stomach and intestines, in the muscular fold of the peritonæum, and between the kidneys, appeared thoroughly injected with blood, as if the animal had died of violent inflammation of all these parts.

The blood from the heart and lungs was first examined under the microscope, in which, with a magnifying power of 210 diameters, were seen innumerable minute cubical particles, floating amongst the large elliptical blood corpuscles. In the fibrous tissue between the epidermis and pectoralis major muscle, square plates, cubical crystals, and parallelograms were seen, together with minute particles, the largest of which appeared to be cubes.

The mesenteric fold of the peritonæum contained the same equi-lateral, equi-angular plates, and cubical crystals. In the fascia of the thigh, besides numbers of these, there appeared, also, beautiful octohedral crystals of the oxalate of lime, similar in all respects to those formed when the intestines of a raccoon, (*Procyon lotor*), were filled with a solution of the chloride of calcium, and immersed in a solution of the oxalate of ammonia.

When the eggs of the frog were mashed, and their contents spread out on a glass slide and examined under the microscope, they contained multitudes of equi-angular plates, and cubical crystals of the oxalate of lime.

It is probable that the exterior fluids passed through the anus and cloaca into the oviducts and ovaries, and finally by endosmose into the eggs themselves.

In the fibrous tissue of the walls of the abdomen, in addition to the cubes and octohedra, and equi-lateral plates, there appeared, also, delicately formed dumb-bell and ellipsoidal crystals.

When the plantar fascia of the foot was cut through, from the incision flowed a fluid resembling the liquor sanguinis mixed with a little blood, which, under a magnifying power of 210 diameters, contained beautiful octohedral and dumb-bell crystals of the oxalate of lime.

This experiment was repeated with slight variations, as to the length of the time, and the density of the fluids, and in every instance, without any exception, the results were the same.

In one instance, the deposit formed within the blood and tissues of the frog, assumed the form of delicate dumb-bell and cruciform crystals of the oxalate of lime. Figure I. represents the appearance of these crystals and their relative size, when compared with the blood corpuscles. In another experiment the blood from the ventricle of the heart contained large and perfectly formed octohedra, with a few dumb-bell crystals, while the various tissues and muscles contained chiefly delicately formed dumb-bells and crystals, and the aqueous humor of the eye contained octohedral, and comparatively large acicular crystals.

Figure II. represents the crystals from the blood of the heart.

Figure III. those found in the tissues, and between the fibres of the muscles.

Figure IV. the acicular and octohedral crystals found in great numbers in the aqueous humor of the eye.

We see then by these microscopical examinations, that the oxalate of lime has assumed forms different in all respects from those of the precipitate thrown down, when solutions of the chloride of calcium and oxalate of ammonia are brought into immediate contact. The precipitate thus formed consists of minute irregular granules. Figure V. represents this deposit. What has changed the physical form of this deposit? It has been accomplished, without doubt, by the action of the membranes upon the chemical substances in solution passing through them.

Experiments upon the physical influence exerted by mucous membranes, removed from all vitality, upon chemical substances in solution passing through them.

Filled the intestine of a Raccoon, (*Procyon lotor*), with a solution of the chloride of calcium, whose specific gravity was 1031, and immersed it in a solution of the oxalate of ammonia, having a specific gravity of 1007. In the course of an hour the exterior fluids became cloudy, with a white precipitate, the oxalate of lime. At the end of two days, a copious white deposit had settled to the bottom of the jar, which, under a magnifying power of 210 diameters, presented the appearance of innumerable acicular, rectangular, and irregular particles, often conglomerated together in great numbers, forming miniature representations of plants with their branches and leaves. Figure VI. represents their appearance.

Specific gravity of exterior fluid 1005.

The interior fluid was next examined, the intestine having been punctured and its contents carefully removed.

Specific gravity of interior fluid 1003.

This marked change of its specific gravity from 1031 to 1003, shows that a free interchange of the fluids must have taken place. The slight change in the exterior fluid, of 1007 to 1005, is readily explained, when we consider the fact, that the exterior was 12, whilst the interior was only 4 fluidounces.

Within the intestines but a small deposit had taken place, in comparison with that of the exterior fluid. Under the microscope this presented a magnificent crystalline appearance, differing wholly from that of the exterior fluids, and also from that formed when solutions of the chlorides of calcium and oxalate of ammonia are brought into immediate contact.

The appearance of this magnificent microscopical object is represented in figure VII.

Amongst the crystals there were no less than seven well defined regularly formed varieties. We recognize the octohedral and dumb-bell crystals, as the form in which the oxalate of lime almost invariably occurs in the urine, not only of man, but also of other animals, and even in that of birds.

Does not this experiment indicate that the peculiar forms of the oxalate of lime, occurring in urine, may be the result of the physical action of the basement membrane of the tubuli uriniferi and its secretory cells?

The tissues of the intestine were next examined.

The cellular tissue was not equally injected; in some places there was scarcely any, while in others there was a very abundant deposit.

In all places the mucous membrane appeared free from any deposit of the oxalate of lime. It was found difficult, however, to decide this question by the microscope, on account of the difficulty of separating the fibrous tissue completely in which occurred a copious crystalline deposit.

This is not the only instance; out of numerous examples, we will select only two.

When the bladder of a raccoon (*Procyon lotor*) was filled with a solution of the bichloride of mercury, and immersed in a solution of the iodide of potassium, a brilliant red crystalline deposit of the biniodide of mercury took place upon the exterior, whilst upon the interior a light yellow mass of lozenge-shaped crystals of the protiodide of mercury was precipitated. In this case also the mucous membrane appeared free from any deposit.

When the intestines of a raccoon were filled with a solution of the acetate of lead, and immersed in a solution of the bichromate of potassa, the deposit upon the exterior consisted of innumerable small irregular granules, while that upon the interior consisted of beautiful stellate crystals.

When a sheep's bladder was filled with a solution of the oxalate of ammonia, and immersed in a solution of the chloride of calcium, no deposit took place in the exterior fluid, whilst a precipitate of the oxalate of lime fell in the interior fluid.

The appearance of this under a magnifying power of 210 diameters, is represented in figure VIII. Within the muscular and fibrous coats of the bladder this deposit presented the same appearance. The fact that solutions of certain chemical substances will pass through a membrane in one direction, but not in another, might be illustrated by many examples.

The stomach of a raccoon was filled with a solution of the bichromate of potassa, and immersed in a solution of the acetate of lead; a copious deposit of the chromate of lead took place in the exterior fluid, whilst none whatever occurred in the interior; it retained its natural color and appearance. The results were in all respects the same when the intestines of this animal were treated in a similar manner.

When the stomach was treated in this manner a deposit took place only upon the interior. When the cesophagus of a large rattlesnake (*Crotalus adamanteus*), was treated in a similar way, only a small deposit occurred in the exterior fluid.

Filled the stomach of a raccoon, and a portion of the intestines of a large rattlesnake with a solution of the iodide of potassium, and immersed them in a solution of the bichloride of mercury; in both cases a copious deposit occurred upon the exterior, whilst little or no precipitate fell in the interior fluid.

These facts are due to one of two causes. Either certain chemical substances in solution exert an influence upon mucous membranes, changing their minute anatomical structure, and thus destroying their power of carrying on the physical phenomena of endosmosis and exosmosis; or else mucous membranes possess a power of choice, as it were, dependent upon their physical constitution, allowing one fluid to pass through in one direction, but not another fluid holding a different chemical substance in solution in an opposite direction. When a portion of the small intestine of a sheep was filled with a solution of the nitrate of lime and immersed in a solution of the oxalate of ammonia, a copious precipitate of the oxalate of lime took place in the exterior fluid, which under a magnifying power of 210 diameters was found to consist of innumerable octohedral crystals of different sizes, also a few dumb-bell crystals. The appearance of this deposit is represented in figure VIII.

In the exterior deposit the octohedra were about one hundred times more numerous than the dumb-bell crystals.

In the interior fluid a deposit of the oxalate of lime had taken place, which under the microscope presented the appearance represented in figure IX. The entire deposit consisted of innumerable minute and delicately formed dumb-bell crystals, with here and there an octohedral crystal. In the interior fluid, unlike the exterior, there were over a hundred dumb-bell crystals to one octohedral crystal. Minute octohedra, and delicately formed dumb-bells, were found within the meshes of the fibrous tissue. By comparing this experiment with the former ones in which solutions of the same chemical substances were used, we are forcibly taught the following laws.

1st. Mucous membranes from the same relative part of the bodies of different animals, exert different physical influences upon the same chemical substances.

2d. Mucous membranes from the same animal, but from different parts of the body, exert different physical effects upon solutions of the same chemical substances.

3d. The physical influence exerted by the membrane is not the same in endosmosis and exosmosis; it differs with the direction of the current.

A very important question now presents itself for our consideration. May not this change of form in the precipitates be due to the presence of some animal substance or fluid, as fibrin, blood, albumen, or serum, and no to the physical

action of the membranes. To determine this point a series of careful experiments were instituted with the following substances; albumen, fibrin, yolk of hen's egg, warm blood, cold blood, putrescent blood, warm serum, cold serum, putrescent serum, and urine. In no case did the presence of these substances produce a crystalline deposit of the oxalate of lime. Each experiment was performed in several different ways, and under different circumstances; sometimes the densities of the solutions of the chloride of calcium and oxalate of ammonia were varied, at others the temperature and conditions of the foreign body. But one result attended all these experiments—no crystalline deposit. In many instances we have mingled the interior and exterior fluids, in both of which crystals had been produced by the action of the membrane, and in every case the precipitate of the oxalate of lime thrown down consisted of irregular granules without any crystalline form whatever. Does not this prove conclusively that the simple presence of the different membranes did not cause the change of the physical form of the precipitate?

The next question which presented itself was, whether dry membranes exert a physical influence upon substances passing in solution through them, capable of changing their physical forms? To determine this point we performed several experiments with dry membranes, with solutions of the chloride of calcium and oxalate of ammonia, varying the relative positions and densities of the fluids in each experiment. In no instance was a regular crystalline deposit obtained. In only one experiments, two or three octohedral crystal occurred in the midst of millions of irregular particles.

All our experiments, thus far, prove that dry membranes exert little or no physical influence upon chemical substances in solution passing through them.

Our next subject was to ascertain the influence of inorganic septa, during the endosmotic action. In our experiments we used thin vessels of baked clay. These were filled with a solution of the chloride of calcium and immersed in a glass jar containing a solution of the oxalate of ammonia. The relative positions and densities of these fluids were also changed. In no instance did we obtain a regular crystalline deposit. So far then as our experiments go, we are able to assert, that inorganic septa do not exert a physical influence upon chemical substances passing through them, capable of changing the arrangement of their molecules.

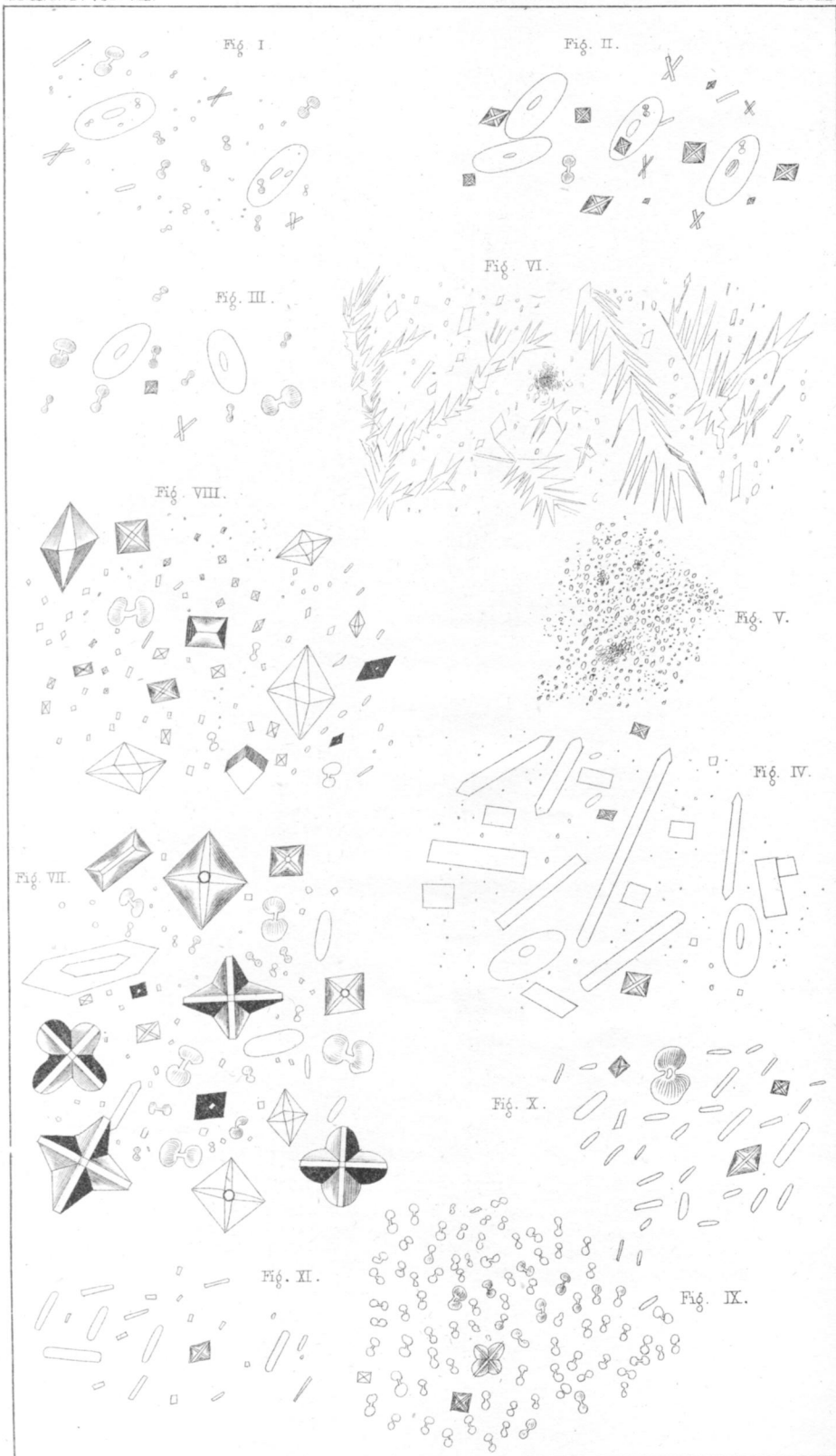
Experiments upon the physical influence exerted upon chemical substances in solution, as they pass through the cell walls of vegetables.

Immersed the cut end of a stalk of Indian corn in a solution of the chloride of calcium, and allowed it to remain for 18 hours, at the end of which time it was removed and placed in a solution of the oxalate of ammonia, in which it remained for a similar length of time. When thin slices of the corn-stalk were examined under a magnifying power of 210 diameters, a crystalline deposit of the oxalate of lime, was found to have taken place within the hexagonal cells of the vegetable, which presented the appearance represented in Figure IX. This differs widely from the deposit formed when solutions of the oxalate of ammonia and chloride of calcium are brought into immediate contact. The precipitate thus formed consisted of irregular granules.

The crystals deposited within the cells of the corn, differed widely also from those formed when the intestines of a raccoon or a sheep were filled with solutions of the oxalate of ammonia, and immersed in solutions of the chloride of calcium.

Immersed sections of different lengths of the stem of a young and verdant benne plant, in a solution of the acetate of lead, and then transferred them to a strong solution of the proto-sulphate of iron. When thin sections were examined under the microscope, beautiful square and lozenge-shaped plates had crystallized in all the hexagonal cells.

When the broad thick leaf of an endogenous plant was placed alternately in solutions of the same chemical substances, a crystalline deposit took place within its cells, which differed in form from that within the cells of the benne plant. Different vegetables were immersed in different chemical solutions,



which when mingled produced a deposit of irregular granules, and in every instance a regularly crystalline deposit took place within their cells.

It is unnecessary to do more than recapitulate the following results.

1. Cell-walls, like animal membranes, exert a physical influence upon the chemical substances held in solution passing through them. This physical influence is capable of altering the arrangement of the molecules of the precipitate formed within the cells, so that the precipitate which under ordinary circumstances consists of irregular granules, under the influence of the endosmotic action assumes a regular crystalline form.

2. The cells of different vegetables, like different animal membranes, change in different manners the arrangement of the molecules of the same substance.

It may yet be demonstrated, by experiment, that cells in the same plant, having different offices, elaborating different products, may exert a different physical influence upon the same chemical substance. Or, in other words, the crystalline deposit of the same substance, will vary in physical properties with different cells.

In conclusion we would state that we are still investigating this subject, and hope to be able to substantiate, by numerous experiments, performed under every possible circumstance, all the laws and facts asserted in this brief abstract of experiments.

Remarks on the question of the identity of Bootherium cavifrons with Ovibos moschatus or O. maximus..

By JOSEPH LEIDY, M.D.

In the Zoology of the voyage of H. M. S. Herald, the author, Sir John Richardson, in speaking of an extinct species of ox, characterized by me under the name of *Bootherium cavifrons* starts a question, of which I think there is not the least necessity. On page 120 of his excellent work, he remarks, "Dr. Leidy includes no fewer than twelve crania, all more or less mutilated, and dug up in the valley of the Mississippi, in his species named *Bootherium cavifrons*, to which he refers Dr. Dekay's specimen; and a comparison of his fig. 2, pl. iii. with the same view of the cranium of the musk-ox in pl. iii. of the 'Zoology of the Herald,' leaves no reasonable doubt of the fossil species being quite distinct from the recent one. The accessory trochleæ of the occipital condyles are fully developed in the fossil skull, and many other peculiarities of *Ovibos* may be discerned in the figures, so that *Bootherium* and *Ovibos* are evidently very closely allied. A question now arises whether the *dentata* above referred to as the foundation of the proposed palæozoic species *Ovibos maximus* may not be a relic of Dr. Leidy's *cavifrons*, and this might, without much risk of mistake, be decided in the affirmative, were it certain that the Siberian crania mentioned in the 'Ossements Fossiles' were identical in species with those imbedded in the drifts of the Mississippi; but as yet the evidence for such an extension of the ancient range of *cavifrons* is wanting. The size of Dr. Leidy's specimen of *cavifrons* does not exceed that of the skull of an aged musk bull, and the *dentata* of *maximus* is of corresponding dimensions. If the discovery of a *dentata* of the musk-ox type, and of suitable size, in the valley of the Mississippi, should hereafter fully establish the identity of *cavifrons* with *maximus*, it may be necessary to ascertain which of the two appellations was first made public."

That *Bootherium* is closely allied to *Ovibos*, as declared in my "Memoir on the Extinct Species of American Ox," page 12, there is no doubt; but that the two genera are distinct I think is proved by the former possessing an important character, which does not exist in the latter nor in any other genus of Bovidæ. The character to which I allude is the large lachrymal fossæ or larmiers situated in front of the orbits, as in the Cervidæ, and which are represented in fig. 1, pls. iv., v., of the memoir above referred to, in both species of *Bootherium*.

"That the Siberian crania mentioned in the 'Ossements Fossiles' are not identical in species with those embedded in the drifts of the Mississippi," I

think any one will grant who will take the trouble to compare the figures of the "Siberian crania," in the works of Pallas,* Ozeretskovsky,† or Cuvier,‡ with my figures of *Bootherium cavifrons*. The former are indistinguishable from the figures given of the crania of the recent *Ovibos moschatus*, while the latter has no deep fissure separating the bases of the horn cores, but these are confluent and form a huge process covering the entire length and breadth of the frontal bone.

Sir John Richardson has himself, in page 22 of his work, considered the "Siberian crania" as belonging to the *Ovibos moschatus*; and in the above extract has stated there is "no reasonable doubt of the fossil species," (*Bootherium cavifrons*) "being quite distinct from the recent one" (*Ovibos moschatus*). Consequently, he has decided that *Bootherium* is a different animal from the species to which the "Siberian crania" belonged. Therefore, it appears to me, when Sir J. R. subsequently says, "A question now arises whether the *dentata* above referred to as the foundation of the supposed palæozoic species *Ovibos maximus*, may not be a relic of Dr. Leidy's *cavifrons*, and this might, without much risk of mistake, be decided in the affirmative, were it certain that the Siberian crania mentioned in the 'Ossements Fossiles' were identical in species with those embedded in the drifts of the Mississippi, but as yet the evidence of such an extension of the ancient range of *cavifrons* is wanting," the question had already been decided that "the Siberian crania" were not "identical in species with those embedded in the drifts of the Mississippi."

Sir J. R. then says, "The size of Dr. Leidy's specimen of *cavifrons* does not exceed that of the skull of an aged musk-bull, and the *dentata* of *maximus* is of corresponding dimensions." If this be the case I would ask, as the "*dentata* of *maximus*" was found in the country of the "musk-bull," and is of the same size as the corresponding bone in that animal, what evidence is there that it does not belong to it?

Under these circumstances "the discovery of a *dentata* of the musk-ox type, and of suitable size, in the valley of the Mississippi," would by no means "establish the identity of *cavifrons* with *maximus*," but would rather tend to show the greater ancient range of the *Ovibos moschatus*.

In regard to the time at which the appellations *cavifrons* and *maximus* were made public I deem it of trifling importance to science, but I may take the present opportunity of stating that the name *Bootherium cavifrons* was proposed in the number of the Proceedings of this Academy for May and June 1852, which was distributed the following month, therefore three months previous to the appearance of the "first part of the Herald's Zoology."

In conclusion I may add a list of what appear to be the species of American ox, recent and extinct.

1. BISON AMERICANUS, (recent and fossil). The fossil certainly not the *Bison prisceus*? Richardson.
2. BISON LATIFRONS, *Leidy*. For synonyma refer to page 8 of Mem. on Ext. Sp. of Am. Ox., and add *Sus Americanus*, Harlan; *Harlanus Americanus*, Owen. §
3. BISON PRISCEUS? *Richardson*.
4. BISON CRASSICORNIS, *Richardson*.
5. BISON ANTIQUUS? *Leidy*. I think not the same as the *Bison crassicornis*, Richardson, but probably it may be *Bison latifrons*.
6. BOOTHERIUM CAVIFRONS, *Leidy*. Syn. page 12 of Mem. on Ext. Sp. &c.
7. BOOTHERIUM BOMBIFRONS, *Leidy*. Syn. page 17 of Mem. on Ext. Sp., &c., and add *Bison bombifrons*, Richardson, Zool. Her. p. 41.
8. OVIBOS MOSCHATUS. (Recent and fossil.) *Bos Pallassii*, De Kay.
9. ? OVIBOS MAXIMUS, *Richardson*.

* Nov. Com. Petrop. xvii., tab. xvii., figs. 1—3.

† Mém de l' Acad. de St. Petersb., iii., pl. vi.

‡ Ossem. Foss. ed. 4, vi., pl. clxxii., figs. 9, 10, clxxi. figs. 6, 7.

§ See Proc. Acad. Nat. Sci. vii. 89.

Descriptions of the species of TROX and OMORGUS inhabiting the United States.

By JOHN L. LECONTE, M. D.

TROX Fabr.

A. Thorax inæqualis præcipue bicostatus.

1. *T. Sonora*, oblongus niger, thorace latitudine fere triplo brevior, irregulariter grosse punctato, inæquali, disco elevato bicostato, lateribus late rotundatis, elytris costis quatuor suturaque elevatis haud interruptis, setis sordidis brevissimis tessellatis, interstitiis muricato-punctatis cicatricosis, tuberculis parvis uniseriatis notatis. Long. .38.

One specimen, Tucson, Sonora. This species is very similar to the next, but the sides of the thorax are less rounded, being almost straight near the base; the furrows of the elytra are distinctly tuberculate, and the general form of the body is narrower. Nevertheless, a larger series of specimens may prove these differences to be of no value.

2. *T. alternans*, oblongus, niger, thorace irregulariter grosse punctato, latitudine fere triplo brevior, lateribus modice rotundatis, elytris costis quatuor suturaque elevatis haud interruptis, setis sordidis brevissimis tessellatis, interstitiis muricato-punctatis, transversim cicatricosis, tribus internis simplicibus, quarto costula intermedia notato. Long. .37.

Kansas Territory and New Mexico. The head is scarcely tuberculate, densely punctured with the clypeus rounded, not margined; thorax two and a half times wider than long, moderately rounded on the sides, ciliate with yellow bristles, irregularly and coarsely punctured, unequal, with the middle of the disc strongly elevated and bicostate, the intermediate furrow being divided by a slight transverse elevation about the middle. Elytra oval, truncate at base, finely serrate on the sides, with four elevated uninterrupted costæ, which are tessellated with short yellowish bristles, and alternate shining spots; suture elevated; the three inner spaces are broadly concave, with irregular transverse elevations, and sparingly marked with small muricate punctures, arranged nearly in four series, but not so closely placed as to render the arrangement obvious; in some directions the transverse elevations seem to indicate a row of tubercles, but this is also very indistinct; the fourth space is marked with an indistinct interrupted costa, forming a row of tubercles; at the tip of the elytra all these irregularities fade away, and the ordinary arrangement of striæ may be traced. The capillary striæ seen in many species are here entirely wanting, except in the subsutural space where they may be faintly discovered. The anterior femora, as in most species, are strongly dilated and crenulate inferiorly; the anterior tibiæ of one specimen from Kansas are without teeth; in the New Mexican specimen, besides the ordinary square terminal tooth, there are two small ones at the middle, and some fine serrations towards the base.

A specimen from Kansas, of smaller size (.35) has the costæ of the elytra less elevated and the interstices less corrugated, so as to present, besides the very small muricated punctures, two rows of large subquadrate punctures, nearly as in *T. porcatus*, from which, however, it is abundantly distinguished by the differences in the form and sculpture of the thorax, and by the absence of the capillary striæ of the elytra.

3. *T. sordidus*, niger, thorace flavo-ciliato, brevissime setoso, inæquali irregulariter grosse punctato, lateribus late rotundatis, medio modice elevato bicostato, elytris costis quatuor interruptis, suturaque elevatis brevissime setosis, postice indistinctis, interstitiis inequalibus bistriatis, tuberculisque parvis uniseriatis. Long. .3.

Georgia, New York, Kansas. Smaller than the preceding, with the sides of the thorax less rounded and the disc less elevated. The second and third costæ of the elytra are more interrupted than the first and fourth, and all are indistinct posteriorly; when the inequalities of the elytra are less marked, the

capillary striæ appear strongly punctured with an intermediate row of small distant tubercles. The anterior tibiæ are furnished with a broad bidentate terminal process, and one well-marked tooth at the middle; they are finely serrate towards the base. The anterior femora are very strongly dilated and crenate on the inferior margin. The head is somewhat more unequal than in *T. alternans*.

4. *T. porcat*us, niger, sordidus, thorace longius flavo-ciliato, sordide breviter setoso, latitudine duplo brevior, lateribus antice rotundatis, inequaliter punctato, medio bicostato, sutura costisque interruptis elevatis flavo-setosis, costis alternis minoribus fere indistinctis, interstitiis punctis magnis quadratis seriatis stria capillari coniunctis. Long. .4—46.

Say, Journ. Acad. Nat. Sc. 5, 193.

Middle and Southern States. The sides of the thorax are straight for three fourths of their length, and are then rounded to the apex; the punctures of the elytra are connected by striæ, and the inequalities diminish towards the tip. The anterior tibiæ are serrate towards the base, with one sharp tooth at the apex: the femora are very much dilated, and hardly crenulate on the inferior margin. In the form of the thorax this species is allied to *T. capillaris*, but in that species the capillary striæ of the elytra are much stronger, the costæ are less distinct, forming merely rows of distant penicellated elevations, and the rows of punctures are not very obvious.

5. *T. tuberculatus*, oblongus, niger, thorace latitudine plus duplo brevior, lateribus late rotundatis, inæquali, partibus elevatis breviter fulvo-setosis, dorso elevato, bicostato, elytris tuberculis valde elevatis oblongis brevissime setosis, quadriseriatim positis, interstitiis parce quadriseriatim muricato-punctatis, suturaque tuberculis parvis uniseriatim notatis. Long. .3—37.

Herbst, Käfer, 3, 24; tab. 21, fig. 6: Oliv. Ins. 4, p. 9; tab. 2, fig. 8.

Scarabæus tuberculatus, De Geer, 4, 317; tab. 19, fig. 2.

Trox serrulatus, Beauv. Ins. 176, tab. 46, fig. 9.

Trox canaliculatus, Say, Long's Exped. St. Peter's 2, 278.

Middle and Southern States, not rare. Besides the apical emarginate process, the anterior tibiæ have only one prominent tooth at the middle; above this are some fine crenulations. This species is not much like *T. sabulosus* of Europe, with which Olivier compares it, but is the only one known to me that will agree with the descriptions or figures.

6. *T. erinaceus*, minus elongatus, subovatus, niger, thorace latitudine fere triplo brevior, lateribus late rotundatis, setis nigris penicellato, dorso bicostato, elytris striis distinctis, interstitiis parce muricato-punctatis interstitiis 3, 5, 7, 9 tuberculis valde elevatis, oblongis, acutis nigro-penicellatis, serie suturali paulo minore ornatis. Long. .25.

South Carolina, Mr. Zimmermann. The intervals between the series of large elevations are marked with a scarcely distinct series of tubercles, hardly larger than the scattered elevated punctures. The denticulations of the anterior tibiæ are not distinct, but one near the middle is a little more prominent.

7. *T. terrestris*, breviusculus, ovatus, niger (præcipue sordidus), thorace latitudine duplo brevior, lateribus vix late rotundatis, subreticulatim inæquali, elytris punctis quadratis seriatis, interstitiis alternis elevatis subinterruptis, brevissime sordide setosis, alternis (alteris) parce muricato-punctatis. Long. .21—24.

Say, Journ. Acad. Nat. Sc. 5, 192.

Middle and Southern States, abundant. The inequalities of the thorax are less developed than in those above described, and are connected together so as to give a reticulated appearance; five of the cells are adjacent to the base, and three fill up the apex. The anterior tibiæ, besides the universally found square apical prominence, have only one moderate tooth below the middle.

8. *T. capillaris*, longiusculus, ovatus, sordide niger, thorace parce setoso, latitudine vix sesquibrevior, lateribus fere rectis, inæquali, dorso bicos-

tato, elytris striis tenuibus elevatis notatis, et punctis parvis notatis, interstitiis tuberculis vix elevatis breviter nigro-fasciculatis ornatis, seriebus alternis maioribus; serie suturali autem secundæ æquali. Long. .36—40.

Say, Journ. Acad., Nat. Sc.. 3, 238: Harris, Trans. Hartford Soc. Nat. Hist. 77.

Middle, Southern and Western States: the anterior tibiæ have a prominent tooth below the middle and a smaller one above the middle. When the elytra are very carefully cleaned the elevated lines towards the suture are seen to be double, while beyond the third series of the larger bunches of bristles, they vanish entirely, and rows of punctures alone are seen. The inequalities of the thorax consist of the two entire dorsal costæ and a smaller one each side, extending from the base beyond the middle.

B. *Thorax haud inæqualis.*

9. *T. variolatus*, elongatus, niger, thorace latitudine duplo brevior, lateribus antice rotundatis, confertim punctato breviter setoso, late canaliculato et marginato, elytris striis tenuibus elevatis punctatis, interstitiis fulvo-penicellatis, alternatim paulo elevatis, seriebus alternis maioribus. Long. .25.

Melsheimer, Proc. Acad. 2, 137.

Middle States. The sutural series of bunches of bristles is larger than the one adjacent. The anterior tibiæ have two or three very small teeth on the outer margin. Closely resembles the next, but readily distinguished by the elevation of the alternate intervals, and by the larger bunches of hair on the elevated spaces.

10. *T. æqualis*, elongatus, niger, thorace latitudine duplo brevior, lateribus antice rotundatis, late deplanatis, confertim subtilius punctato, breviter fulvo setoso, dorso subcanaliculato, elytris striis tenuibus elevatis punctatis, interstitiis æqualiter uniseriatim fulvo penicellatis. Long. .25.

Say, new species of insects of Louisiana, (1832).

Middle and Southern States. The anterior tibiæ have one small tooth near the apical prominence, which is bidentate.

11. *T. fascifer*, elongatus, niger, thorace latitudine duplo brevior, lateribus late rotundatis, late deplanatis, confertim subtilius punctato, breviter fulvo setoso, dorso vix canaliculato, elytris striis tenuibus elevatis subtilius punctatis, interstitiis æqualiter uniseriatim fulvo penicellatis. Long. .26.

One specimen, San Francisco. Precisely similar in form and appearance to the preceding, but differs in having the striæ of the elytra finely instead of coarsely punctured: the outer margin of the anterior tibiæ above the terminal bidentate prominence is marked with three small but distinct teeth.

12. *T. laticollis*, minus elongatus, niger, nitidus, thorace latitudine plus duplo brevior, lateribus magis rotundatis, late explanatis, angulis posticis valde obtusis, parce setoso, grossius punctato, late canaliculato, elytris striis subtilius punctatis, interstitiis planis fasciculis minutis nigris uniseriatim ornatis. Long. .24.

One specimen, New York. Broader than the two preceding, with the sides of the thorax considerably rounded, so that the posterior angles become obtuse: the fascicles of the elytra are composed of only three or four short black bristles, which arise from a somewhat muricate puncture. The anterior tibiæ have three small equidistant teeth, exclusive of the terminal prominence.

13. *T. striatus*, oblongus, convexus, nigro-piceus, nitidus, thorace latitudine plus duplo brevior, lateribus angustius marginatis late rotundatis, sat dense punctato subcanaliculato, elytris glabris, striis profunde crenatis impressis, interstitiis subconvexis, parce punctulatis. Long. .25.

Melsheimer, Proc. Acad. 2, 137.

Pennsylvania, Rev. D. Zeigler; very rare. Besides the strongly bidentate apical tooth, the anterior tibiæ are armed with three small teeth: the posterior angles of the teeth are nearly rectangular.

14. *T. atrox*, elongatus, ovatus, niger, thorace latitudine duplo brevior, late marginato, confertim punctato, breviter setoso, subcanaliculato, lateribus late rotundatis, elytris striis duplicatis crenatis, interstitiis uniseriatim flavo-setosis. Long. .33.

One specimen, found near Long's Peak. The setæ of the elytra arise from small muricated punctures. The anterior tibiæ are more dilated than in the other species; the terminal tooth is very much rounded, and above it are two or three sinuosities indicating other teeth. The form is that of *T. variolatus*, but larger.

OMORGUS Er.

This genus, described at length in Wiegmann's Archiv., (13, 111) and referred to in Erichson's Ins. Deutsch. (925), contains the largest species of our native Trogidæ. It differs from *Trox* by the corneous prominent ligula, by the first joint of the labial palpi being longer than the second, and finally by the terminal hook of the maxillæ being cleft, and the second hook being single. (In *Trox* the terminal hook is usually trifid.) As these characters are difficult, certain differences in appearance may be made use of to separate the two genera. Thus in *Trox* the sides of the thorax are strongly ciliated, and broadly regularly rounded, while in *Omorgus* the sides are hardly ciliate, and are frequently irregular, and sometimes toothed: the eyes of our native species of *Trox* are reticulated, and the posterior tibiæ toothed; while in *Omorgus* the eyes are smooth, and the posterior tibiæ in our native species without teeth. Of these habitual characters, reliance can be placed absolutely upon none but the structure of the sides of the thorax, as according to Erichson, species of *Trox* occur in which the eyes are smooth and the posterior tibiæ toothless. Our species may be divided thus:

A. Corpus apterum; thorace bullis nitidis ornato.

1. *O. texanus*, apterus niger, convexus, thorace cataphracto valde inæquali, lateribus rotundatis ante basin subincisis, elytris seriatim grosse punctatis nitidis irregulariter cœlatis. Long. .8.

Eagle Pass, Texas, collected by Mr. Schott, under Major Emory, of the U.S. and Mexican Boundary Commission, and also by Lieut. Haldeman. This species is larger than *O. scutellaris*, and the lines of punctures on the elytra are better marked; but except in the form of the sides of the thorax, there appears to be no special difference; as in that species, the posterior outer angle of the large four-angled bulla each side of the dorsal channel is produced.

2. *O. scutellaris*, apterus niger, thorace cataphracto, valde inæquali, lateribus rotundatis, elytris seriatim minus distincte punctatis, transversim cœlatis, interstitiis subquadratis, subæqualiter parum elevatis. Long. .6—·65. *Trox scutellaris* Say, Journ. Acad. Nat. Sc., 3, 238.

Kansas Territory near the mountains: New Mexico, Mr. Fendler: abundant.

3. *O. suturalis*, apterus niger, thorace cataphracto, valde inæquali, lateribus rotundatis, elytris minus distincte seriatim punctatis, transversim cœlatis, interstitiis inæqualiter magis elevatis, sutura costata. Long. .63.

Texas Mr. Schott, two specimens. Distinguished from the preceding by the more elevated and irregular shining spaces of the elytra, and by the suture being elevated in the form of a costa.

4. *O. umbonatus*, apterus niger, thorace cataphracto, valde inæquali, lateribus rotundatis, elytris minus distincte seriatim punctatis, interstitiis transversim cœlatis, alternatim magis elevatis. Long. .65.

Texas, Messrs. Schott & Clark. Also allied to *O. scutellaris*, but besides the inequality of the rows of elevations of the elytra, the four-angled bulla each side of the dorsal channel of the thorax has the posterior outer angle not produced, and almost obtuse. The body is also more elongated.

B. Corpus alatum; thorax tuberculis punctatis haud nitidis ornatis.

5. *O. scabrosus*, sordide niger, opacus, thorace valde inæquali, lateribus rotundatis pone medium incis, angulis posticis rotundatis, elytris tuberculis magis elevatis cataphractis seriatis ornato, seriebus alternis maioribus, interstitiis punctis muricatis sparsis fere inordinatis. Long. .57—.7.

Trox scabrosus Beauv., Ins. d'Afr. et d'Amer. 175, tab. 46, fig. 4.

New York, Florida, Texas. This species has entirely the appearance of the next, from which it seems to differ only by its usually much larger size, and by the sides of the thorax (excluding the indentation) being rounded instead of angulated, and by the elevated points between the large series of tubercles of the elytra being much larger, and by some of them forming intermediate series of smaller tubercles. As in the next there is a sutural series of small tubercles.

This large species is abundant, especially near the sea shore.

6. *O. pustulatus*, sordide fuscus, vel niger, opacus, thorace valde inæquali, lateribus medio fere angulatis, pone medium incis, angulis posticis rotundatis, elytris tuberculis serie quadruplici et ad suturam positis magis elevatis cataphractis, interstitiis parce inordinatim muricato-punctatis. Long. .55—.6.

? *Trox tuberculatus* Beauv., Ins. 175, tab. 46, fig. 3.

Southern States, not rare. This species agrees very well with Beauvois' figure, but his insect is said in the text to have been found in Hayti. It is remarkable that while he mentions that *Trox tuberculatus* (Olivier) was unknown to him, he should retain for his own very different species the same specific name.

This species is distinguished (apart from the differences in the elytra) from the following as well as the preceding species by the sides of the thorax converging obliquely from the middle to the apex; the effect of this is to produce an indistinct angle near the middle; this character in consequence of the gradual curving of the sides is not seen either in *O. scabrosus* or in *O. asper*.

7. *O. asper*, niger, sordidus, opacus, thorace valde inæquali, lateribus late rotundatis, pone medium subincis, angulis posticis latius rotundatis, elytris tuberculis magis elevatis cataphractis quadruplici serie ornatis, sutura interstitiisque tuberculis minutis uniseriatim positis, et ordinatim profunde punctatis. Long. .5.

Georgia, South Carolina, Mr. Zimmermann. The elevated punctures scattered irregularly between the rows of tubercles, as seen in the two preceding species, have here disappeared; the intervals are somewhat unequal, and in each are seen two moderately regular rows of large punctures, with an intervening series of small tubercles, which like the larger tubercles are covered with a brown crust. These small tubercles are, however, scarcely more elevated than the places between the punctures forming the rows. The lateral incision of the thorax is much less deep than in the preceding species, and the posterior angles are broader and less prominent.

8. *O. punctatus*, griseus, thorace inæquali, lateribus obliquis late rotundatis, pone medium subincis, angulis posticis vix rotundatis, canali dorsali antice mediocri, elytris seriatis crenato-punctatis, interstitiis parce subtiliter muricato-punctatis, alternis paulo elevatis nigro-tesselatis. Long. .46—.55.

Trox punctatus Germ. Ins. Nov. 113.

Trox alternatus Say, Bost. Journ. Nat. Hist. 1, 179.

Trox crenatus† Beauv., Ins. 176, tab. 46, fig. 1: (nec Oliv., Ent. 4, tab. 1, f. 4.)

Trox denticulatus† Beauv., Ins. 175, tab. 46, fig. 7, 8: (nec Oliv. Ent. 4, tab. 2, fig. 14.)

? *Trox unistriatus* Beauv., Ins. 175, tab. 46, fig. 5.

Our most abundant species, found from New York to Santa Fe and Texas. The tessellated spots of the elytra in well preserved specimens afford an excellent character for distinguishing it: greasy specimens are uniformly black in color, and in such the absence of tubercles on the elytra, and the less deep dorsal channel of the thorax may be taken as distinguishing marks. The punctures of the striae of the elytra vary somewhat in size; sometimes they are small, deep and well

defined; at other times they are broad and subquadrate, so that the less elevated interstitial spaces appear transversely rugous: the alternate intervals are sometimes very distinctly, and sometimes hardly apparently elevated, yet with a large series of specimens these differences shade imperceptibly together. The inequalities of the thorax are much less conspicuous than in the following species, and the four usual posterior tubercles are rather flattened.

The synonym last quoted is not certain, yet as specimens occur in which the sutural space is more distinctly elevated than the others, it would be safer to refer it here, than to retain it as a species, without any distinct character. *Trox crenatus* and *denticulatus* (Oliv.) are described as South American species, and do not appear to resemble those described under the same name by Beauvois.

9. *O. morsus*, sordidus (vel niger) thorace valde inæquali, lateribus late rotundatis, pone medium paulo incis, angulis posticis late rotundatis, dorso antice valde canaliculato, elytris seriatim crenato-punctatis, interstitiis alternatim modice elevatis, interruptis (subtesselatis) tuberculis nitidis obtusis, alternis tuberculis minoribus notatis. Long. .5—·55.

Texas and Kansas. Very similar to the next species, and differs principally in having the sides of the thorax distinctly incised a little behind the middle. In well preserved specimens, the elytra would probably be tessellated, as in the preceding species: between the large tubercles are seen rough places, as if for the insertion of short bristles, precisely as in badly preserved specimens of *O. punctatus*: the smaller series of tubercles are sometimes hardly visible. The inequalities of the thorax are very much elevated, and the four posterior tubercles very distinct, the outer ones as usual being interrupted.

10. *O. integer*, sordidus (vel niger) thorace valde inæquali, lateribus late rotundatis, haud incis, angulis posticis rotundatis, disco antice valde canaliculato, elytris seriatim crenato-punctatis, interstitiis interruptis tuberculatis, alternatim magis elevatis. Long. .5—·53.

Texas and Northern Sonora, near Tucson. As in some specimens the spaces between the black tubercles are covered with a brown crust, the elytra are probably tessellate in well preserved individuals. Besides the absence of the lateral incision of the thorax, this species differs from the preceding by the tubercles of the elytra being more closely arranged, and by the less elevated intervals being more unequal. In one specimen, however, the intermediate rows of small tubercles are almost obsolete.

11. *O. tessellatus*, convexus, sordide cinereus, thorace inæquali, lateribus magis rotundatis haud incis, angulis posticis paulo rotundatis, disco antice valde canaliculato, elytris muricato-punctatis, crenato-striatis, interstitiis paulo convexis spatiis quadratis nigris lævigatis, parum elevatis tessellatis. Long. .61—·65.

This fine species is contained in the beautiful series of Coleoptera brought by Dr. Thos. H. Webb from the boundary between Mexico and the United States, and is labelled "San Diego trip": for the purpose of completing the present genus, the description is placed here, though it properly belongs to a paper to be found below.

The form of the thorax is similar to that of the preceding, but the elevations, although very sudden, are smaller, and the anterior one is distinctly divided into two longitudinal ridges, the outer one, of course, being shorter; the elevations of the elytra are nearly equal, except the sutural row, which is smaller. The anterior tibiae are armed with a distinct tooth about the middle.

Some corrections in the Nomenclature of Coleoptera found in the United States.

BY JOHN L. LE CONTE, M. D.

During the course of years through which our Coleoptera have gradually been made known, too often under great disadvantages arising from the limited libraries, and still more limited collections to be found in this country, many species have been referred to wrong genera, and thus became placed in such relation to

known species as very much to confuse subsequent investigators. The student of local faunæ alone can be expected to remove these obstacles, which fortunately are now but few in number. Such of them as have come before my view while arranging in my collection several families, upon which I am not yet prepared to publish special investigations, are here presented, in the hope of economizing time and labor for other entomologists.

Besides these, I have found it necessary to indicate several generic synonyms, which have been created by want of familiarity with foreign species belonging to genera not previously known in this part of the globe, or which, from the fanciful classifications frequently invented in the study of large groups, are so described as to be irre recognizable, without typical species. It is to be understood that the corrections here made embrace only such as have not appeared in Dr. Melsheimer's Catalogue of Described Coleoptera, or in any of the synopses or monographs published in this country or Europe, so far as known to the author.

1. *Elmis vittatus* Mels. Proc. Acad. 2, 99. Well preserved specimens of this species, found at Baltimore, which I owe to the kindness of Mr. J. P. Wild, have proved that the reference to *E. 4-notatus* Say, made by me in Proc. Acad. 6, 44, is incorrect. The mutilated specimen in Dr. Melsheimer's collection was insufficient to make known the character of the species, which is larger and narrower than *E. 4-notatus*, with the sides of the thorax less rounded, and the punctures composing the striæ of the elytra smaller and less distant. The color is yellow, with the head, sides of the thorax, margin and suture of the elytra, blackish, and the postpectus, femora and tibiæ dusky. From *E. bivittatus* Lec. it is distinguished by its smaller size, paler color, and by the narrower and less convex thorax having the sides less rounded.

2. *Macronychus lateralis* Mels. Proc. Acad. 2, 99, does not differ from *M. glabratus* Say, Journ. Ac. 5, 187.

3. *Simplocaria strigosa* Mels. Proc. Acad. 2, 118, (*Georissus strigosus* Mels. Cat. Descr. Col. 35) has been shown by me (Proc. Acad. 7,) to be a *Syn calyptra*, and very probably European.

4. *Cicones marginalis* Mels. Proc. Acad. 2, 112, must be referred to *Coxelus*.

5. *Atomaria crenata* ||Mels. Proc. Acad. 2, 114 (*Cryptophagus gilvellus* Cat. Descr. Col. 45) belongs to *Litargus* Er.

6. *Phanæus torrens* Lec. Journ. Acad. 2d, 1, 85, by the completion of the series of specimens, proves to be a bright colored, short horned variety of *P. triangularis*.

7. *Onthophagus niger* Mels. is a dark variety of *O. Janus*.

8. *Ochodæus obscurus* Lec. Journ. Acad. 2d, 1, 86, is no *Ochodæus*, but seems related to *Aesalus*, near which it will form a new genus.

9. *Ochodæus americanus* Westwood, Trans. Ent. Soc. London, 2d, 2, 66, is, on the contrary, a true *Ochodæus*, but was previously known as *Bolbo cerus musculus* Say, Bost. Journ. Nat. Hist. 1, 178.

10. *Scarabæus splendens* Beauv. 89, tab. 26, fig. 2, is referred by Mr. Chevrolat to *Xyloryctes*, (Ann. Ent. Soc. Tr. 2d, 18, 641,) but appears to be really *Strategus Antæus* ♀.

11. *Scarabæus Bosci* Beauv. ibid. fig. 1, is also a *Strategus*, not described by Burmeister.

12. *Anomala marginella* Lec. Proc. Acad. 7, 81, is the previously known *A. binotata* Burm.

13. The species of *Tostegoptera* described by me, viz., *T. cribrosa*, *ventricosa*, *æqualis* (Proc. Acad. 6, 231 and 440) form a new genus distinguished by the ligula being deeply and squarely emarginate, while in *Tostegop-*

tera the same part is subtruncate; the emargination in *T. æqualis* is less than in the other two, but is quite obvious. This genus may be separated under the name *Eugastrea*.

14. *Polyphylla variolosa* Harris, is referred by Erichson (Ins. Deutschl. 659) to *Melolontha occidentalis* Linn., an entirely different species of the same genus, which is found in the Southern States, and which has the suture and three vittæ on each elytron covered with white hair.

15. *Melolontha 10-lineata* Say, a species of the same genus, is closely allied if not the same as the Mexican *Polyph. leucogramma* Blanch. (Cat. Mus. 161.)

16. *Atractopterus incongruus* Lec. (Trans. Am. Phil. Soc. 10, 454) is very similar to the European *Sericosomus fugax*; the name *Sericosomus* is founded upon characters, although recognizable, too slight to be admissible in a system of rational classification, but as its type coincides with *Atractopterus*, it seems proper that the latter name should be suppressed.

17. *Pyractomena linearis* Lec. Proc. Acad. 5, 336, is *P. lucifera* Mels. ibid. 2, 304; the latter name I placed incorrectly as a synonym of *P. angulata*.

18. *Pyractomena fenestralis* Mels. ibid. 2, 304, is not *Ellychnia corrusca*, as stated by me (Proc. Acad. 5, 334) but another species of *Ellychnia*, allied to *E. nigricans*.

19. *Allœcnemis* Lec. Proc. Acad. 6, 232. This must be added to the already numerous synonyms of *Polycæon* Lap. which has been passed from Cleridæ to Melyridæ, and as in the present instance to Nitidulidæ. Its true resting place is, as indicated by Erichson in Ptiniore, where it approaches on the one hand *Apatæ*, and on the other *Lycetus*; a curious species found in Texas by Lieut. Haldeman completes the chain of analogy in form and sculpture.

20. *Triphyllus rugosus* Randall, (*Cis rugosus* Mels. Cat. Deser. Col. 85,) is *Endecatomois reticulatus* Mellié, Ann. Ent. Soc. Fr. 2d, 6, 213.

21. *Xyletinus sericeus* Say, Journ. Acad. 5, 171, belongs to *Trypophytus* Redt.

22. *Xyletinus flabellicornis* Sturm, Cat. (1826) tab. 1, fig. 7, does not belong to the family of Ptiniore, nor can I at present indicate where it should be placed.

23. *Tomicus liminaris* Harris, (Ins. Inj. Veget. 78,) found by Miss Morris to inflict serious injury upon peach trees, belongs to *Phloeotribus*.

24. *Pachyrhynchus Schönherrii* Kirby, Fauna Bor. Am. 203; *Rhinaria Schönherrii* Schönh. 7, 2, 369, is merely *Ithycerus curculionoides* Schönh. 1, 246.

25. *Brachytarsus obsoletus* Schönh. (1839) 5, 167, is *Anthrribus variegatus* Say, (1826) Journ. Acad. 5, 251.

26. *Brachytarsus brevis* Schönh. (ibid.) is *Anthrribus tomentosus* Say, ibid.

27. *Anthrribus coronatus* Schönh. (1833) 1, 141, is *A. cornutus* Say, (1831) Curcul. 4.

28. *Anthrribus capillicornis* Say, (1826,) is *Aræcerus coffeæ* Schönh. (Fabr.)

29. *Anthrribus 4-notatus* Say, (1826,) is *A. bimaculatus* Oliv. and belongs to *Tropideres*.

30. *Trichœcnemis* Lec. (Journ. Acad. 2d, 2, 110) is not sufficiently distinct from *Ergates*; the Californian species must therefore be called *E. spiculatus*.

32. *Tinopus* Lec. (ibid. 2d, 2, 19) is the same as *Rhopalophora* Serv.

33. The genus *Argaleus* Lec. (ibid. 2d, 1, 319) is founded on defective characters; the type *A. nitens* is congeneric with *Leptura monticola* Randall, upon which I founded *Evodinus*; the latter genus must therefore be suppressed.

The second species of *Argaleus* (*Pachyta attenuata* Hald.) enters the genus *Anthophylax* Lec. *Piodes* must be united with *Acmæops*. Commencing then with *Rhagium*, our genera of *Lepturidæ*, having the front oblique, the mentum trapezoidal, and the gula emarginate each side of the mentum, may be thus arranged:

1. *Antennæ ante oculares*; *tibiæ calcaribus ad apicem sitis*;
 - a. *Sterna gibba*; *coxæ anticæ discretæ* *Rhagium*.
 - b. *Prosternum simplex*; *coxæ anticæ contiguæ*; *oculi integerrimi*; *Gaurotes*.
Mesosternum protuberans *Acmæops*.
Mesosternum planum
2. *Antennæ vix interoculares*;
 - a. *Tibiæ calcaribus ante apicem sitis* *Toxotus*.
 - b. *Tibiæ calcaribus ad apicem sitis*; *Argaleus*.
Oculi mediocres; *elytra postice angustata* *Centrodera*.
Oculi magni; *elytra linearia*
2. *Antennæ interoculares*; *oculi intus emarginati*; *tibiæ calc. ad apicem sitis*;
 - a. *Palpi labiales dilatati* *Anthophylax*.
 - b. *Palpi labiales maxillaribus non latiores*.
Antennæ articulis externis utrinque impressis *Typocerus*.
Antennæ 11-articulatæ articulis haud impressis; *Strangalia*.
Thorax angulis posticis productis *Leptura*.
Thorax angulis posticis haud productis

The separation of the last two genera is evidently unnatural. The separation of *Centrodera* and *Argaleus* is also on very slight characters, but as thus far there is a peculiarity of appearance, which renders each easy of recognition, it will be more convenient to permit them to remain distinct. The other genera appears to be entirely natural.

34. *Taraxis* Lec. (*Agassiz' Lake Superior*, 237) does not appear different from *Auchenia*.

35. *Heliophilus fossor* Lec. (*Journ. Acad.* 2d, 1, 92) appears not to be related to *Heliophilus*, but to be a new genus near *Opatrum*; *Opatrum latimanus*, described at the same time, is also referred incorrectly; it is allied to and perhaps congeneric with *Leichenium*.

36. *Pytho pallida* Say, (*Journ. Acad.* 3, 271,) belongs to *Adelina*.

37. *Boletophagus tetrapus* Newman, (*Ent. Mag.* 5, 378,) is *Eledona depressa* Randall, *Bost. Journ. Nat. Hist.* 2, 21; the last mentioned name has priority by two months.

38. *Boletophagus silphides* Newman, *ibid.* is on the other hand a species of *Peltis*, (!!) so closely allied to *P. dentata* of Europe, that by Dejean it was considered identical.

39. In *Psorodes* Solier (*Studi Entom.* 167) has placed *Helops contractus* Beauv. under the name *P. inflata*. The same insect was long ago made the type of a special genus, *Meracantha canadensis* Kirby, (*Fauna Bor. Am.* 238.) The name must therefore be *Meracantha contracta*.

40. *Stenochia gracilis* Lec. (*Ann. Lyc.* 5, 150) is allied to *Allecula*; the penultimate joint of the tarsi is lobed, and the unguis are serrate.

41. *Mycetochares ruficornis* Mels. *Proc. Acad.* 3, 59, is a *Melandryide*, congeneric with *Hallomenus luridus* Hald.

42. The last named species does not appear sufficiently distinct from *H. scapularis* Mels. *Proc. Acad.* 3, 57.

43. *Orchesia sericea* Mels. *ibid.* upon which the genus *Calasia* Hald. is constructed is a true *Scryptia*.

44. *Scryptia lutea* Hald. is not different from *S. pallipes* Mels.

45. *S. americana* Hald. placed in the *Cat. Descr. Col.* p. 143, as synonymous with the last, is a different species.

46. *S. rugosa* and *flavicollis* Hald. do not belong to *Scaptia*; but I cannot find any genus in which they may be placed; they appear rather related to some *Tenebrionides*, than to *Melandryades*.

47. *Anaspis 4-punctata* Say, Journ. Acad. 3, 276, is a true *Mordella*.

48. *Anaspis ventralis* Mels. seems to be a variety of *A. rufa* Say, Journ. Acad. 5, 244. *A. filiformis* Lec. Agassiz' Lake Superior 231, is the male of the same.

49. *Anthobates* Lec. (Lac. Sup. 231) must be reunited with *Anaspis*; the character upon which I separated it is entirely false; nor can I account for such an error of observation.

50. *Lytta fulgifer* Lec. is merely a dark colored variety of *L. Nuttalli* Say.

51. *Eugnathus*|| Lec. Trans Am. Phil. Soc. (10, 375,) a genus allied to *Panagæus*, must be changed to *Micrixys*. The name *Eugnathus* has been already twice used in the order of *Coleoptera*.

Descriptions of new Coleoptera collected by Thos. H. Webb, M. D., in the years 1850-51 and 52, while Secretary to the U. S. and Mexican Boundary Commission.

By JOHN L. LE CONTE, M. D.

Most of the species collected by Dr. Webb, have been already described by me from other sources, but the remaining nondescripts contain a comparatively greater number of large and beautiful species than any other collection yet obtained. The localities are mostly given within limits.

Cicindela prætextata, longiuscula, subtus viridi-ænea, abdominis lateribus albo-pilosis, supra fusco-cuprea, opaca; labro albo transversim quadrato, antice subtiliter tridentato, fronte utrinque subtiliter striato, thorace lateribus rotundatis albo-pilosis, latitudine haud longiore modice convexo, impressionibus transversis profundis; elytris thorace sesqui latioribus modice convexis, limbo latiusculo albo, intus obtuse dentato, fascia intermedia obliqua longiuscula recta, subtilius haud profunde punctatis: palpis sexus utriusque testaceis, articulo ultimo æneo. Long. .45—.6.

"San Diego to El Paso." By a figure kindly sent me by Prof. Lacordaire, this species seems somewhat related to *C. circumpicta*, yet the prolonged oblique band of the elytra, as well as the thorax, which is not brilliant and not deeply sulcate, will distinguish it. The species here described appears in general more related to *C. generosa*, *formosa*, &c., but is more elongated in form. The apex of the elytra is not at all serrate, and in the female each is considerably rounded, while in the male they are conjointly rounded and the little tooth of the suture is more obvious.

Two males found on the "San Diego trip," differ from the type by the more brilliant coppery color of the upper surface, the more distinct punctures of the elytra, and by the middle band of the elytra being gradually dilated internally and truncate, while in the type it is rounded at tip, and not dilated.

Cicindela lemniscata, elongata cylindrica subtus viridiænea, abdominis lateribus albo-pilosis, supra cuprea; labro albo rotundato, subtridentato, fronte concavo, utrinque striato viridi-micante, antennis nigris, thorace [rugoso, cylindrico, lateribus albo-pilosis vix rotundatis, impressionibus transversis profundis, disco medio purpureo, elytris thorace vix sesqui latioribus, parallelis apice oblique rotundatis, densius fortiter punctatis, vitta utrinque discoidali integra alba pone medium intus obtuse bidentata, et apicem ad suturam ambiente: pedibus palpisque testaceis, his apice æneis. Long. .31.

"San Diego trip," one male. This small and slender species is the only North American one known to me in which the elytra are ornamented with a vitta equally remote from the suture and margin: the outline of the vitta is straight,

rendered irregular internally by two slight and obtuse teeth near the tip; it is also prolonged around the apical margin to the suture; the tip of each elytron is slightly rounded, and the margin is not serrate.

Melanotus erro, nigro-piceus, nitidus, mandibulis fortiter rugosis, thorace capite cum oculis haud latiore, latitudine fere triplo brevior, postice angustato, angulis posticis obtusissimis valde rotundatis tenuiter canaliculato, lateribus rotundatis anguste marginatis, basi utrinque late impresso alutaceo, elytris thorace haud latioribus striis profundis impunctatis, interstitiis fere planis, antennis palpis pedibusque rufo-testaceis. Long. .57.

One specimen, "San Diego trip." This species, the second discovered in North America, is considerably larger than *A. scaritides* Chaud. (*Cratognathus scar.* Perty, *Amblynathus niger* Gray,) which it otherwise closely resembles in general characters.

Acilius maculatus, ovalis, paulo convexus, infra ferrugineus, supra niger nitidus, capite ante oculos, maculaque transversa verticali flavis, thorace lateribus fasciaque angusta postice concava ad medium interrupta flavis, elytris margine maculis tribus annexis, alterisque disci (quarum una ad medium prope suturam multo maior) late flavis, pedibus anterioribus testaceis. Long. .55.

Fem. striolis a basi ad quadrantem elytri singuli extensis. Mas latet.

One specimen from the Copper mines. In this beautiful species there is a complete absence of the small anastomosing spots seen in our other native species. The ground color above is black with well defined bright yellow spots: those of the head consist as usual of the anterior part, and the transverse vertical spot, which is emarginate anteriorly. The thorax has the sides broadly yellow, and two narrow discoidal spots running obliquely outwards and backwards, so as to form a fascia concave behind and interrupted at the middle. The spots of the elytra consist of a yellow margin extending nearly to the tip; joined to it are three spots, the first extending from the base almost to the middle, undulated internally and suddenly dilated at its posterior extremity, as if by the addition of a small spot; the second is quadrate and placed about the second third; the third is at the tip of the yellow margin and is subtriangular, with the apex directed anteriorly: there are besides on each elytron two basal spots, the outer of which is elongated; two small quadrate spots at the anterior fourth; a large rounded one about the middle and near the suture; a smaller one still nearer the suture at the posterior fourth, and a small one very near the apex. A small yellow dot may be seen between the two basal spots, but is perhaps sometimes wanting: the surface is nearly smooth; the usual series of punctures are distinct, and from the middle of the base of each elytron to the large spot are scattered a few short striae as in the females of other species.

Dineutes in te ger, oblongo-ovalis dorso convexiusculus, supra niger subaeneus, minus nitidus; elytris obsolete punctatis tenuiter obsolete striatis, postice conjunctim rotundato-truncatis, vix undulato-emarginatis, subtus niger, pedibus posticis picescentibus. Long. .61.

One specimen from the Copper mines. From *D. vittatus*, which it equals in size, this species is at once distinguished by the tips of the elytra being conjointly broadly rounded, so as to leave no apparent angle at the suture.

Stethoxus subsulcatus, elongato-ovalis, convexus, utrinque attenuatus, olivaceo-niger, nitidus, thorace trapezoideo, latitudine plus duplo brevior lateribus vix rotundatis, basi late emarginato, angulis posticis apice rotundatis, elytris obsolete sulcatis, sulcis utrinque oblitteratis, lineisque punctorum solitis tribus notatis; antennis palpisque ferrugineis. Long. 1.25, lat. .65.

At Camp 7. Still narrower than *S. triangularis* (*Hydrophilus triangularis* Say), and readily distinguished by the broad indistinct furrows of the elytra: the furrow next the suture can hardly be seen.

Plusiotis gloriosa supra late psittacina, clypeo punctulato margine sub-

tili elevato aureo, thorace scutelloque limbo toto angusto aureo punctulatis, elytris parce punctulatis margine laterali vittisque quatuor impressis splendide aureis nitidissimis, interstitiis 2 et 3io foveis inauratis confluentibus vittam parvam simulantibus ornatis, subtus aureo-viridis, commissuris omnibus aureis, mesosterno subito declivi, vix porrecto. Long. .78—.92.

Copper mines and at Camp No. 6. This most splendid species belongs to division II. of Burmeister, (Lamell. 2, 420), but is very different from any described by him.

Chalepus obsoletus, piceo-nigra nitida, clypeo punctato, emarginato, thorace subtilissime reticulato, parce punctato, apice coreo marginato, elytris striis solitis haud impressis subtiliter punctatis, interstitiis alternis parce subtiliter punctatis. Long. .82, lat. .43.

One specimen, "San Diego trip." Larger and proportionally narrower than *C. trachypygus*; the striæ of the elytra are merely rows of fine punctures. The pygidium is polished, sparsely and somewhat finely punctured, with a strongly impressed line running around its posterior margin.

Polyphylla cavifrons, fusco-ferruginea pube squamulosa pallide fusca parce vestita, thorace lateribus sulco dorsali plagaque utrinque basali densius pubescente, sat dense minus subtiliter punctato, clypeo (maris) lateribus oblique divergentibus, antice truncato valde concavo, elytris sutura vittisque angustis utrinque tribus densius squamulosis, subtus densius squamulosa, pectoribus lana longissima tectis, tibiis anticis fortiter 3-dentatis. Long. .88—1.10.

One male found on the San Diego trip and another mutilated one procured by Mr. Schott on the Rio Grande. Similar in form and size to *P. variolosa* Harris, but differs in the clypeus being much more concave, and wider at tip than at base. The lines on the elytra are only moderately distinct, and the short humeral vitta seen in *P. 10-lineata* is entirely wanting. From all other American species known, it differs in having the anterior tibiæ of the male (and therefore also of the female) strongly three toothed, thus belonging to Erichson's division B. (Ins. Deutschl. 659) with the European *P. hololeuca* Er.

Copris mæcha, nigra, clypeo punctato apice subemarginato, (maris cornu elongato cylindrico armato) thorace punctato, disci medio lævi, canaliculato (maris antice retuso emarginato et abrupte declivi, lateribus cornu compresso valde elevato armato, linea solita elevata submarginali, impressioneque transversa laterali notato) elytris striis sat profundis subtilius crenatis, interstitiis lævibus. Long. .77.

One male from Camp 14. Allied to *C. anaglyptica*, but differs by the much more strongly developed horns, the less dense punctuation of the thorax, and the deeper elytral striæ. From a Central American species known in collections as *C. Chevrolatii* Dej., it differs by having all the hollows of the thorax strongly punctured, and by the clypeus being more distinctly emarginate: it is possibly, however, merely a northern variety of that species.

Ochodæus simplex, ovalis convexus, ferrugineus, breviter fulvo-setosus, punctatus, clypeo haud carinato, transversim leviter sulcato, apice subtruncato, elytris confertim punctatis leviter striatis interstitiis haud elevatis. Long. .25.

One specimen from the Copper mines. Differs from *O. musculus* by the absence of the transverse carina of the vertex, and by the anterior margin of the clypeus not being elevated: the teeth of the mandibles cannot be seen.

Ochodæus striatus, oblongo-ovalis, convexus ferrugineus, breviter fulvo-setosus, punctatus, clypeo antice subtruncato subtiliter marginato, vertice elevato vix transversim carinato, thorace postice canaliculato, elytris parcius punctatis striis crenulatis, interstitiis paulo convexis. Long. .25.

One specimen from Arispe. A little narrower than the preceding, with the vertex elevated, but forming rather a transverse tubercle than a carina. The striæ of the elytra are moderately deep, and the interstices are slightly convex and rather sparsely punctured.

Chalcolepidius Webbii, supra niger, nitidus, subtiliter punctulatus, squamis minutis viridi-cyaneis conspersus, thoracis lateribus elytrorum basi et lateribus pube depressa albida densissime vestitis, antennis fortiter serratis, articulo 2ndo minuto, 3io sequente haud brevior, elytris striis subtiliter punctatis vix impressis. Long. .95—1.47.

As a slight testimony of my appreciation of the valuable labors of Dr. Webb while connected with the Boundary Commission, I have dedicated to him this very fine species: several specimens were obtained on the journey from San Diego to El Paso, and also on the San Diego trip. The thorax is about one fourth longer than wide, with the sides in the female nearly parallel from the base to within one fourth of the apex, where they converge obliquely and are slightly rounded. The posterior angles are very slightly prolonged, and are somewhat acute, not carinated. The scutellum is cordate, wider posteriorly, and emarginate at each end. The elytra gradually taper from the base, are slightly rounded on the sides, and suddenly rounded at the tip: the striæ are very faint, and are finely punctured.

The thorax of the male is more gradually narrowed anteriorly, and the antennæ extend to the posterior fourth of the thorax, while in the female they reach only to the middle: in both sexes the third joint, though as long, is not as wide as the fourth.

Chalcolepidius smaragdinus, elongatus niger nitidus, dense subtiliter punctatus, undique squamulis late viridi-aureis dense tectus, antennis pedibusque cyaneis, illis articulis 2 et 3 minutis, thorace latitudine sesqui longiore lateribus antice late rotundatis, scutello obovato, elytris striis fere obsoletis subtilius punctatis. Long. .9—1.07.

San Diego trip. Similar in form to *C. viridipilis*, but with the thorax much less suddenly rounded towards the tip: the elytra are also very faintly striate, and the striæ not deeply punctured. The scutellum is not emarginate at either end.

As in *C. viridipilis* the antennæ of the male are as long as the thorax, and almost flabellate.

Pelecyphorus rimatus, niger, thorace latitudine duplo brevior disco paulo convexo subtilius disperse punctato, lateribus magis rotundatis confluentibus rugosis late depressis, angulis posticis obtusis haud rotundatis, elytris ovatis, thorace vix latioribus postice declivibus dorso subplanis grossius punctatis pubrugosis, lateribus acute marginatis, epipleuris parce obsolete punctatis. Long. 1.0.

One specimen from Camp No. 7. This species is very different from any of the other *Asidites* of our country, though it approaches the species indicated by me under the name *subcostatus* (Proc. Acad. 6, 446): the elytra are however more densely and coarsely punctured, and without the three faint ribs seen in that species. The antennæ are shorter than the head and thorax, and moderately thick, as in *P. carinatus*, *sordidus*, &c.

Pelecyphorus difformis, niger, thorace latitudine paulo brevior, lateribus late sensim reflexis, antice rotundatis medio angulatis, dein usque ad basin concavis, basi truncato, angulis posticis fere rectis, disco parcius subtiliter, lateribus grossius et rugose punctatis, elytris thorace vix latioribus, elongato-ovalibus postice acuminatis, minus profunde scabro-punctatis striis distinctis latis modice profundis, humeris minutis porrectis, epipleuris subito reflexis. Long. .95.

Santa Cruz, two specimens: in one the thorax is slightly concave transversely, while in the other the sides are considerably elevated. This species is closely allied to *P. elatus* Lec. (Proc. Acad. 6, 445) but is smaller and narrower, and at once distinguished by the distinctly striate elytra: the striæ in the other species mentioned, if present, are always very faint.

Euschides liratus, latiusculus ater opacus, minus convexus, supra breviter flavo-pubescent, thorace latitudine sesqui brevior, alitrorsum angustato, lateribus rotundatis incrassatis et reflexo-marginatis, angulis anticis acutis, basi truncato, angulis posticis subrectis, dorso inæquali confertim punctato, medio anguste cari-

nato, elytris thorace latioribus, postice declivibus et acuminatis, margine sutura costisque utrinque tribus acute elevatis (interna paulo brevior). Long. .6.

San Diego trip, one specimen. Of the form of *E. opaca*; the marginal costa extends to the tip of the elytra, the inner discoidal one ceases at one-third, and the other two at one-fourth from the apex.

Euschides convexicollis, niger nitidus, thorace convexo medio obsolete ad latera discrete punctulato, lateribus tenuiter marginatis, rotundatis, angulis omnibus obtusis haud prominulis, basi rotundata, elytris obovatis, lateribus haud marginatis, apice valde declivibus et obtuse acuminatis, disperse punctulatis et parce subtiliter rugosis. Long. .63—.85.

Durango, Chihuahua, Copper Mines, Los Organos, and at Camps 5, 6 and 7. This species is of the form of *E. obovata* Lec. (Ann. Lyc. 5, 127,) but is very different by the convexity of the thorax, which is only very finely margined: the thorax varies in form, being sometimes nearly one half wider than its length, but in general the two dimensions are equal. In the male the elytra are one half wider than the thorax, in the female about twice as wide.

Epitragus submetallicus, piceus aeneo-micans, fusco-pubescent, thorace latitudine vix brevior antrorsum subangustato et lateribus rotundato, basi bisinuata, angulis posticis rectis, dorso parum convexo sat punctato, elytris thorace duplo latioribus humeris oblique rotundatis, subtilius densius punctatis, punctisque maioribus obsolete striatis. Long. .66.

San Diego trip, one specimen. Much larger than *E. canaliculatus*, with the sides of the thorax rounded in front and parallel behind the middle: the outer striae of the elytra are almost entirely effaced, those near the suture may be distinguished by the rows of larger punctures. The head is coarsely and thickly punctured, and inside of the superciliary ridge on each side is a moderately deep longitudinal frontal impression.

Cysteodemus cancellatus. *Meloe canc.* Brandt. and Er. Nov. Act. 16, 141; tab. viii. fig. 9.

Los Organos, Camp 7, and San Diego trip. The variety figured by Erichson has an unusual amount of red upon the elytra: that color generally forms an irregular vitta, with diverging and anastomosing branches. It is closely allied to *C. vittatus* Lec., but is larger, with the thorax more transverse, and the elytra more unequal. The back part of the head is frequently of a dull sanguineous color, and the same variation is also found in *C. vittatus*.

Lytta atrivittata, nigra, subtus pube cinerea fasciata, supra dense cinereo-pubescent, capite maculis magnis posticis duabus atris, thorace latitudine longiore, canaliculato, maculis duabus disci magnis atris, lateribus ante medium rotundatis, elytris thorace plus sesqui latioribus vittis utrinque duabus latis atris ad apicem conjunctis, antennis palpis tibiis tarsisque nigris. Long 1.05.

One male, San Diego trip. This very fine species belongs with *L. longicollis* and *sublineata*, which it equals in size; the antennae are of a brilliant black, the first joint extends beyond the occiput, is slender at base, very much curved beyond the middle, and much compressed and dilated, with a large shallow impression on its anterior face near the apex; the second joint is thick and obconical; the third is two-thirds smaller, and the fourth again larger, so that together they are longer than the second; the fifth and following are almost equal in length to the third and fourth united, and are progressively narrower. The under surface of the body is black, with all the sutures broadly pubescent with dense cinereous hair; the under surface of the femora is also similarly clothed.

Asclera pallida, elongata, testacea dense pallide pubescens, thorace obovato capite vix latiore, obsolete canaliculato latitudine paulo longiore, pone medium angustato, lateribus antice rotundatis postice subsinuatis, elytris paulo latioribus cylindricis, lineis utrinque tribus obsoletis densius pubescentibus, antennarum articulo 1mo 3io paulo longiore. Long. .31—.38.

San Diego trip: the pubescence is so dense as almost to conceal the punctures

which are moderately fine: the thorax is very faintly impressed each side anteriorly, and the sides are somewhat blackish in most specimens.

Asclera cana, nigra pube subtili cinereo-cana, thorace rufo, obovato latitudine longiore, lateribus ante medium rotundatis dein sensim angustato, maculis tribus anticis infuscatis, dense punctulato, linea angusta dorsali lævi, elytris thorace latioribus confertissime scabro-punctulatis, lineis tribus subelevatis obsoletis, sutura densius pubescente: femoribus basi rufis. Long. .34.

One specimen, San Diego trip. Allied in form and characters to *A. thoracica*, and, as in that species, the first joint of the antennæ is not longer than the third.

Ripiphorus rufus, rufo-ferrugineus nitidus, capite parce punctulato, occipite producto obtuse rotundato vix impresso, thorace elytrisq. confertim aciculato-punctatis, illo latitudine fere sesqui longiore, antrorsum sensim angustato, lateribus rectis, basi media longius acute lobata, angulis posticis rectis haud productis; femoribus tibiisque apice rufis. Long. .27.

One female, San Diego trip. The antennæ are brown; the sides of the occiput converge, and the apex is very obtusely rounded and subtruncate.

Ophryastes validus, niger (griseo-squamosus?) breviter parce pubescens, rostro crasso, basi constricto trisulcato, sulcis lateralibus brevibus profundis postice dilatatis et convergentibus, thorace latitudine duplo brevior, apice basi-que fortiter constricto, lateribus dilatatis obliquis, inæquali foveatim punctato, elytris ovalibus thorace latioribus foveis magnis minus profundis striatim positis notatis, interstitiis paulo convexis, alternatim sublatis. Long. .65.

One specimen, Oct. 20th, (near Chihuahua.) Larger than *O. latirostris* Lec. (Proc. Acad. 6, 443) and sufficiently distinct from all the species known.

Ophryastes porosus, niger cinereo-squamosus, parce breviter pubescens, rostro crasso, basi parum constricto, trisulcato, sulcis externis brevibus dilatatis vix convergentibus, thorace latitudine duplo brevior, antrorsum angustior, utrinque modice constricto, lateribus rotundatis, acute canaliculato, inæquali sat dense foveato, elytris thorace latioribus rotundato-ovalibus, convexis basi truncatis striis foveatim punctatis, interstitiis paulo convexis. Long. .37.

From the same locality, one specimen. This also differs very materially from all those heretofore known.

Cælocnemis punctatus niger, subnitidus capite thoraceque sat punctatis, hoc latitudine non brevior, subquadrato, postice subangustato lateribus rotundatis ad basin breviter sinuatis, angulis posticis rectis prominulis, elytris thorace vix latioribus convexis seriatim punctatis, interstitiis subtiliter rugulosis sat dense punctatis. Long. .83.

One specimen, from Lieut. Beckwith's Collection along lat. 38°; probably from Utah; as the genus has not heretofore occurred east of California. This species is more elongated than usual, and differs from all the others known to me by the thorax being less rounded on the sides and less narrowed behind, so that it does not present the cordate form seen in *C. dilatocollis*, &c. The punctures of the interstices of the elytra are very distinct, and although smaller than those arranged in the rows, are so dense as to render the striæ indistinct.

C. californica Mann. is unknown to me, and from the figure given (Mag. Zool. 1844) approaches more nearly to this species in form; the thorax, however, appears to be more rounded and cordate. The elytra of that species are described as having nine rows of punctures, while in *C. dilatocollis* Mann. only eight rows are mentioned; the fact is, that in all the species nine rows are seen, but the marginal row in one description was omitted; in cases when two species of the same genus have a different number of striæ on the elytra, the change is produced by some of the striæ becoming obsolete, and the situation of the obsolete striæ can always be determined; no phenomenon of the kind is to be expected in this genus.

Abstract of a Report to Lieut. James M. Gilliss, U. S. N., upon the Reptiles collected during the U. S. N. Astronomical Expedition to Chili.

By CHARLES GIRARD.

BATRACHIANS.

1. *CYSTIGNATHUS TENIATUS*, G.—Vomerine teeth situated a little behind the inner nares, well separated upon the middle of the palate. Tongue subelliptical, free posteriorly, and slightly notched upon the same margin. Color greenish yellow, with two dorsal blackish stripes. Limbs barred above. A dark vitta upon the sides of the head, extending from the nostrils, across the eye to the shoulder.

From the neighborhoods of Santiago, Chili.

2. *PHYLLOBATES AURATUS* G.—Tongue narrow and elongated, free for about the half or two-thirds of its length. Anterior limbs, when stretched backwards, reaching the vent with the tip of longest finger. Inferior surface of thighs granular. Color, above, metallic golden; beneath, uniform bluish brown.

Collected on the Island of Taboga, in the Bay of Panama, by the late Prof. C. B. Adams, of Amherst College, Mass.

OPHIDIANS.

3. *ELAPS NIGROCINCTUS*, G.—Head subelliptical, broader than the body, which is long and cylindrical. Tail conical, abruptly tapering from its base. Scales smooth, disposed upon fifteen rows. Color reddish, annulated with jet black. Tip of scales blackish. Anterior portion of head black. An occipito-temporal yellowish ring. Tip of tail black.

From Taboga, Bay of Panama

4. *DRYOPHIS VITTATUS*, G.—Three postorbital plates, two of which constituting the posterior rim of the orbit, the third being placed behind them. Fifth and seventh, or fourth, fifth and sixth labials constituting the inferior rim of the orbit. A black vitta along the upper margin of the upper maxillary plates, extending posteriorly along a portion of the neck.

From Taboga, Bay of Panama.

5. *TACHYMENIS CHILENSIS*, G.—*Coronella chilensis*, SCHL. Ess. Phys. Serp. II. Part. descr. 1837, 30—GUICH. in Gay, Hist. de Chile. Zool. II. 1848, 79. Erpet. Lam. iv. fig. 1. a. b. c. d.—*Dipsas chilensis*, DUM. Mém. Acad. des. Sc. xxiii, 1853, 112; DUM. & B. Erp. gen. VII. i. 1854, 608.—Two anteorbitals. Third and fourth labials constituting the inferior rim of the orbit. Dorsal scales in nineteen rows. Color olivaceous brown, with crossing lines of black. Beneath yellowish, with anterior margin of scutellæ black. Two postocular black vittæ.

From the neighborhoods of Santiago, Chili.

TÆNIOPHIS, G.—Head depressed and detached from the body, which is slender and subcylindrical. Tail tapering to a point and comparatively short. Cephalic plates normal. One anteorbital, and two postorbitals. An elongated, quadrangular loreal. Two nasals, nostrils between them. Eye above the medium size, situated above the fourth and fifth labials; pupil circular. Mouth deeply cleft. Scales smooth, disposed upon nineteen longitudinal series. Postabdominal scutella bifid. Subcaudal scutellæ all divided. Colors disposed upon uniform longitudinal bands.

Obs. Distinguished from *Diadophis*, to which it is closely related, by the presence of one anteorbital plate, instead of two, by a larger number of longitudinal rows of scales, and the distribution of colors.

Besides the species hereafter diagnosed, a second one (*T. imperialis*, B. & G.,) an inhabitant of the province of Tamaulipas, Mex., was sent to the Smithsonian Institution, by Capt. Van Vliet, U. S. A., as collected near Matamoras.

6 *TENIOPHIS TANTILLUS*, G.—Body and tail very slender. Head elongated, and very distinct from the body. Eye proportionally large. A deep chesnut brown band reigns along the dorsal region; light brown on the sides. Beneath greenish or yellowish grey. Upper labials yellowish white. A superciliary yellowish fillet.

From the neighborhood of Santiago, Chili.

SAURIANS.

7. *PROCTOTRETUS FEMORATUS*, G.—Cephalic plates rugose. Auricular aperture moderate, provided with an arched plate upon its supero-anterior margin, and one or two conical scales beneath and upon the same anterior margin. One series of supralabials. Temporal shields well developed, imbricated and carinated. Sides of neck with but one inconspicuous fold, and covered with small carinated scales. Dorsal scales large, carinated, posteriorly acute, and diminishing in size towards the sides. Abdominal scutellæ smooth and entire. Posterior surface of thighs granular. Tail elongated and slender. Brownish, with two parallel light vittæ on either side, and two series of black spots. Abdomen whitish, unicolor, inferior surface of head, with greyish irregular broken lines.

Collected about Santiago, Chili.

8. *PROCTOTRETUS STANTONI*, G.—Cephalic plates rugose. Auricular aperture moderate, margined anteriorly with very small scales, one of which larger than the rest. One series of supralabials. Temporal shields well developed, sub-rounded, imbricated and carinated. Sides of neck with one indistinct fold, and covered with acute and carinated scales, a little smaller than those of the back, which are large, posteriorly subacute and strongly carinated. Abdominal scutellæ rounded posteriorly and slightly carinated. Posterior surface of thighs granular. Tail elongated and slender. Ground color deep brown, with a reddish tint posteriorly; two parallel vittæ on the sides. Abdomen unicolor, with metallic reflections.

Caught in the neighborhood of Santiago, Chili.

A List of Pigeons of the genus CARPOPHAGA, Selby, in the Collections of the Academy of Natural Sciences of Philadelphia, and of the U. S. Exploring Expedition, (Vincennes and Peaseck,) Washington; with descriptions and notices of new and little known species.

By JOHN CASSIN.

1. *CARPOPHAGA ÆNEA*, (Linn.) Knip and Prevost's Pigeons ii. pl. 3. Briss. Orn. i. pl. 13 fig. 2.

Columba ænea, Linn. Syst. Nat. i. p. 283 (1766) Buff. Pl. Enl. 164.

Palumbus moluccensis. Briss. Orn. i. p. 148.

Carpophaga sylvatica. Tickell, Jour. As. Soc. Bengal ii. p. 581, (1833.)

Bill without frontal process or knob, under coverts of the tail dark chesnut. Entire head neck and inferior parts light cinerous, more or less tinged with lilac (or vinaceous). Back, rump wings and tail fine metallic green, changing to golden and copper on the back and wings, and to blue on the tail. Under wing coverts light cinereous.

Founded by Linnæus on Brisson's description made from specimens in the cabinet of "M. l'Abbé Aubry," "*caudam infernè tegentes castaneo-purpureæ*" (Briss.) No mention made of knob at the base of the upper mandible, nor is it represented in Brisson's figure.

Ten specimens in Coll. Acad. from Java, Borneo, "*Moluccas*," and "*India*."

2. *CARPOPHAGA ROSACEA*, (Temm.) Pl. col. 578, Knip and Prev. Pigeons, iii. pl. 34.

Columba rosacea, Temm. Pl. col. iv. p. (liv. 98.)

Bill without frontal knob, under tail coverts dark chesnut, tail uniform metallic green. Head and entire under parts very light cinereous with a pale purplish or rosaceous tinge, especially on the head above. Upper parts dark cinereous with a green metallic lustre.

Nearly allied to *C. aenea*. One specimen in Coll. Acad. from Timor.

3. *CARPOPHAGA RUFINUCHALIS*, nobis.

No frontal knob, under tail coverts chesnut, tail uniform dark metallic green. About the size of *C. aenea*, and *C. rosacea*. Bill moderate, rather slender, without frontal protuberance, wing moderate, second quill longest, legs moderate or rather long, the upper half of the tarsus feathered, toes rather long, padded and flattened on their under surfaces, hind toe with a row of bristles on each side of the central row of scales, claws strong curved.

Neck behind with a wide transverse well defined band of glossy chesnut, succeeded by a narrow band of dark bluish cinereous. Head above light bluish cinereous, entire under parts light purplish cinereous (or vinaceous), nearly white on the throat and darker on the abdomen. Under coverts of the tail dark rufous chesnut. Back, upper wing coverts, secondaries, rump, upper tail coverts and tail above brilliant metallic green with golden and copper colored reflections. Primaries brownish black with a faint tinge of green. Inferior coverts of the wings pale cinereous. Bill and feet light colored.

Dimensions.—Total length (of skin) about 14½ inches, wing 9, tail 5½ inches.

Hab.—Unknown; spec. in Mus. Acad. Philada.

Obs.—One specimen only of this bird is in the collection of the Academy, and is from the Rivoli collection. It bears some resemblance to the species regarded by me as *C. aenea*, and in a measure resembles the figure given as the female of that bird in Knip and Prevost's Pigeons, ii. pl. 4. It resembles also to some extent *C. rosacea*, (Temm). The large and well defined nuchal band distinguishes the present species from those mentioned and from all others that have come under my notice.

4. *CARPOPHAGA PICKERINGII*, nobis.

No frontal knob, under tail coverts light cinereous, tail above dark metallic green. About the size of the preceding. Bill moderate, rather slender (without frontal protuberance), wing moderate, second and third quills longest and nearly equal, tail rather long, containing fourteen feathers, legs moderate, upper half of the tarsus feathered, lower half presenting in front about three wide transverse scales, claws strong, flattened laterally, curved.

Under coverts of the tail light cinereous. Entire head and neck and under parts light purplish cinereous, darker and with the purple most distinct on the top of the head, the breast and abdomen, the cinereous mingling gradually with the darker color of the back, which with the rump, wings and tail are dark ashy brown with a green metallic lustre most brilliant on the tail. Under wing coverts light cinereous, under surface of the tail light glaucous cinereous. Bill (in dried skin) light ashy blue, feet light.

Dimensions.—Total length (of skin) about 15½ inches, wing 9½, tail 9½ inches.

Hab.—Mangsi, Sooloo Islands, spec. in coll. Ex. Exp.

Obs.—This Pigeon belongs to the same group as *C. aenea*; it differs in being rather larger, in having the wings and tail longer, and in having the under tail coverts light cinereous instead of dark chesnut. From *C. lacernulata* and *C. badia* it differs in having the tail uniform dark metallic green, with no terminal bar as in those species. It also somewhat resembles *C. cineracea*, but differs in having longer wings and in having the head above and neck behind light cinereous instead of dark cinereous.

The only specimens of this species that we have seen are in the fine ornithological collection made by the U. S. Exploring Expedition, (Vincennes and Peacock) now in the National Museum, Washington city.

I dedicate this bird, as a slight testimony of respect, to Charles Pickering, M. D., one of the Naturalists of the Exploring Expedition, who, in addition to the materials for his valuable volumes, has, in his manuscript notes, now in my possession, made important contributions to Ornithology.

5. *CARPOPHAGA CINERACEA*, (Temm.) Pl. col. 563.

Columba cineracea, Temm. Pl. col. iv. p. (liv. 95).

No frontal knob, under tail coverts light tawny, tail uniform ashy black.

Head above and entire upper parts cinereous brown, under parts vinaceous, darker on the breast and lighter on the abdomen and ventral region.

Perhaps not of this genus. Two spec. in coll. Acad. from Timor.

9. *CARPOPHAGA BADIA*, (Raffles,) Temm. Pl. col. 165, Knip and Prev. Fig. iii. pl. 37.

Columba badia, Raff. Linn. Trans. xiii. p. 317, (1822).

Columba capistrata, Temm. Pl. col. iv. p. (liv. 28, about 1824).

Ducula insignis, Hodgson, As. Res. xix. p. 162 (1836).

Carpophaga cuprea. Jerdon, Madr. Jour. 1840 p. 12

No frontal knob, under tail coverts light tawny, tail ashy black, widely tipped with (or with its terminal one fourth) light cinereous. Head above pale cinereous, throat white, neck behind and under parts light vinaceous. Back, rump, and wing coverts dark ashy brown, in many specimens tinged with rufous chesnut (or bay). Under wing coverts dark cinereous.

Five specimens in Coll. Acad. from India.

7. *CARPOPHAGA LACERNULATA*, (Temm.) Pl. col. 164.

Columba lacernulata. Temm. Pl. col. iv. p. (liv. 28).

No frontal knob, under tail coverts dark chesnut, tail ashy black, widely tipped with light cinereous (or with its terminal one fourth, light ashy). Head above cinereous, throat rufous, under parts light vinaceous. Upper parts dark ashy brown, with a faint green lustre.

Allied to the species immediately preceding. Two spec. in Coll. Acad. from Java.

8. *CARPOPHAGA OCEANICA*, (Lesson), Voy. Coquille, pl. 41, Knip and Prev. iii pl. 24.

Columba oceanica, Lesson, Voy. Coquille, Zool. i. p. 708 (1826).

Columba pacifica, Gm. Syst. Nat. i. p. 777 (1788)?

With a frontal knob, lower part of the abdomen, tibiae, ventral region and under tail coverts bright rufous. Throat white, head above, neck and breast cinereous, darker on the former. Upper parts of the body, wings and tail dark metallic green, under wing coverts dark brownish cinereous.

A distinct and well marked species. One spec. in Coll. Acad.

9. *CARPOPHAGA GLOBICERA*, Forst. Desc. An. p. 166, (1844).

Male with a large frontal knob, under tail coverts chesnut, tail dark metallic green. Head above and neck behind light ashy, nearly white at the base of the bill. Entire under parts dark vinaceous, upper parts of the body, wings and tail dark metallic green, under wing coverts brownish black. Female without frontal knob, and with all the colors paler.

Quite distinct from the preceding (*C. oceanica*), and from all other species known to me. Well described by Forster as cited above. Of this remarkable species two specimens are in the collection of the U. S. Exp. Exp., Vincennes and Peacock.

10. *CARPOPHAGA LATRANS*, Peale, Zool. U. S. Ex. Exp. Vincennes, Birds p. 200, (first edition, 1848).

No frontal knob, under tail coverts tawny, tail above dark glossy liver brown. Head, neck, and entire under parts dark vinaceous, more clearly ashy on the neck behind, upper parts of the body and wings dark ashy brown, under wing coverts and inner edges of quills bright rufous.

Of this fine species one specimen is in the collection of the Academy and is labelled as from New Guinea. Two specimens in the collection of the Ex. Exp. are from the Feejee Islands. It apparently is allied to *Columba Mayeri*, Prevost, (Pigeons iii. pl. 60).

11. *CARPOPHAGA PERSPICILLATA*, (Temm.) Pl. col. 246.

Columba perspicillata, Temm., Pl. col. iv. p. (liv. 42).

Columba myristicivora, Scopoli, Flor. et Faun. Insub. p. 94? Sonn. Voy. iii. pl. 102?

No frontal knob, but with the membranes of the nostrils large, under tail coverts light ashy, slightly tinged with rufous. With a frontal band of white and a ring of white around the eye, head above and neck dark ashy brown, paler on the neck in front, under parts ashy white. Upper parts of the body and wings dark metallic green.

Two specimens in Coll. Acad. labelled in Europe as from the "Moluccas." It is quite probable that this is the *Columba myristicivora*, Scopoli, and that the large membrane of the nostril is intended to be represented in Sonnerat's plate.

12. *CARPOPHAGA AURORÆ*, Peale, Zool. U. S. Ex. Exp., Vincennes, p. 201, (first edition, 1848).

With a large frontal knob, under tail coverts dark plumbeous glossed with metallic green, tail above uniform dark metallic blue. Head, neck and under parts of the body light cinereous, nearly white on the former. Upper parts of the body and wings dark metallic blue, changing to green in some lights, under wing coverts dark lead color.

This handsome bird is allied to the preceding (*C. perspicillata*), but is quite distinct. Several specimens in the Coll. Ex. Exp. are from the Society Islands.

13. *CARPOPHAGA PINON*, (Quoy and Gaimard), Voy. Uranie, Ois. pl. 28.

Columba pinon, Quoy and Gaim. Voy. Uranie, Zool. i. p. 118, (1824).

No frontal knob, large bare space around the eye, abdomen and under tail coverts maroon, tail ashy black with a white subterminal band. Head above, back, rump and wings light cinereous, scapulars black. Neck before and behind and breast light vinaceous. Bare space around the eye encircled with white.

One specimen in the Coll. Acad. without label indicating locality.

14. *CARPOPHAGA WILKESII*, Peale, Zool. U. S. Ex. Exp., Vincennes, p. 203, (first edition, 1848).

Columba Forsteri, Wagler, Isis, 1829, p. 739.

Bill with a frontal elevation, under tail coverts dark plumbeous, glossed with metallic green, tail uniform dark metallic green changing to blue. Head, neck, and entire under parts dark plumbeous, nearly black on the former, upper parts of the body and wings dark metallic green changing to blue in some lights, under wing coverts dark metallic green.

We regard it as possible that this fine species may be the same as named by Wagler as above and described by Forster in Des. An. as a variety of his *C. globicera*. The under tail coverts are represented by both these authors as ferrugineous, which is not the case in the present bird, and there are other differences, especially the greater size of the species now before us.

Two specimens in the Coll. Ex. Exp. are from Tahiti.

15. *CARPOPHAGA LEPIDA*, nobis. Voy. Uranie, Atlas Zool. Ois. pl. 29?

Bill with a large frontal protuberance which includes the apertures of the nostrils; wing moderate, second quill longest; tail rather short, composed of twelve feathers, under tail coverts nearly as long as the tail. Legs short; tarsus feathered for half its length, thick; toes rather long, padded and flattened on their under surfaces; claws strong, curved.

Frontal protuberances (at the base of the upper mandible) yellow. Entire head, neck, breast and abdomen light purplish cinereous, (or light vinaceous,) changing to light cinereous on the back of the neck, where it joins the color of the back, and becoming darker and clearer vinaceous on the breast and abdomen. Back, upper wing coverts, secondary quills, rump and upper tail coverts brilliant metallic green, with golden and copper colored reflections. Primary quills and tail feathers brilliant metallic blue, the outer edges of the former and both edges of the latter changing to green. Ventral region, under tail coverts

and tibiæ reddish chestnut color; short feathers of the tarsi cinereous. Inferior coverts of the wing light cinereous. Bill dark; feet light?

Dimensions.—Total length (of skin) about 15½ inches; wing 8½; tail 5 inches.

Hab.—Northern Australia? Specimen in Mus. Acad. Philada.

Obs.—The only specimen of this splendid bird that we have ever seen is that above described, and which is one of the many highly valuable contributions to the Museum of the Academy, made by Mr. Edward Wilson. It was obtained by him in Europe, and bears a label only indicating the locality, as we have given it above. It may be the species figured in Voy. Uranie, and regarded by Quoy and Gaimard as *Carpophaga anea*.

16. *CARPOPHAGA NOVÆZEALANDIÆ*, (Gmelin.) Knip and Prev. Fig. ii. pl. 1.

Columba novæ zealandiæ, Gm. Syst. Nat. i. p. 773 (1788.)

Columba zealandica et spadicea, Lath. Ind. Orn. ii. p. 603 and Supp. p. 60.

Columba argetræa, Forst. Desc. An. p. 80, (1844.)

No frontal knob; head, neck, breast and upper parts of the body, wings and tail, beautiful metallic green, changing to golden and cupreous in some lights. Under parts of the body and under tail and wing coverts white, the latter (under wing coverts) tinged with ashy.

Numerous specimens of this magnificent Pigeon are in the Coll. Acad., from various localities. I can detect no specific difference between those from New Zealand and from elsewhere.

17. *CARPOPHAGA FORSTERII*, (Prevost.) Knip and Prevost's Pigeons, iii. pl. 47.

Columba Forsterii, Prevost. Knip and Prevost's Pigeons, iii. p. 67 (1834?)

Carpophaga poliocephala. G. R. Gray, Genera of Birds, ii. pl. 119?

Head ashy white, paler on the throat; under tail coverts chestnut. Entire upper parts, neck before and breast, fine metallic green, changing to golden and cupreous on the neck behind and back; abdomen white tinged with rufous; tail above metallic green, with a wide transverse band of ashy white.

Of this splendid species I have doubts respecting the correct name, *Columba Forsterii* having been previously applied to other birds of this family. It is, however, very probably *Carpophaga poliocephala*, as cited above.

Two specimens in the Coll. Acad. are from the Celebes.

18. *CARPOPHAGA MAGNIFICA* (Temm.) Pl. Col. 163. Knip and Prev. Fig. iii. pl.

25. Gould B. of Aust. v. pl. 58.

Columba magnifica, Temm. Linn. Trans. xiii. p. 125.

Head pale cinereous; entire upper parts of the body, wings and tail green, tinged with yellow on the back; greater wing coverts with large spots of yellow, wide medial portion of the under parts fine dark purple; ventral region and under tail coverts dark gamboge yellow. Under wing coverts yellow.

Numerous specimens of this beautiful species are in the Coll. Acad. and of the Ex. Exp., all of which are from Australia.

19. *CARPOPHAGA PUELLA*, (Lesson.) Knip and Prev. Pigeons, iii. pl. 1.

Columba puella, Less. Bullet. Sci. Nat. 1827, p. 400. Voy. Coquille Zool. i. p. 711.

Carpophaga assimilis, Gould. Proc. Zool. Soc. London, 1850, p. 201.

Similar to the preceding (*C. magnifica*) in colors, but is much smaller in size. Head not so clear cinereous; back less tinged with yellow.

Numerous specimens from Australia are in the Coll. Acad.

20. *CARPOPHAGA LUCTUOSA*, (Temm.) Pl. Col. 247. Gould B. of Aust. v. pl. 60. Knip and Prev. Fig. iii. pl. 40.

Columba luctuosa, Temm. Pl. Col. iv. p. (liv. 42.)

No frontal knob. Entire plumage of the head and body white, in some specimens with a faint yellowish cast. Tail white, with a wide terminal band of black tinged with ashy; quills ashy black, lighter on the secondaries, which are edged with pure black; tertiaries ashy black. Plumage of the ventral region tipped with black.

Numerous specimens in Coll. Acad. from Australia.

21. *CARPOPHAGA BICOLOR*, (Scopoli.) Sonnerat's Voy. iii. pl. 103. Knip and Prev. fig. ii. pl. 7.

Columba bicolor, Scop. Flor. et Faun. Insub. ii. p. 94 (1786.)

Columba alba, Gm. Syst. Nat. i. p. 780 (1788.)

Columba littoralis, Temm. Hist. Nat. Pigeons, p. 7.

Carpophaga casta, Peale. Zool. U. S. Ex. Exp. Vincennes, Birds, p. 204 (first edition, 1848.)

No frontal knob. Entire plumage of the head and body white. Tail white, with a wide terminal band of black; primary and secondary quills black, faintly tinged with ashy; tertiaries white. Resembles the preceding, but is rather smaller and without the black markings on the ventral region.

Of this beautiful bird several specimens are in the Coll. Acad. and are labelled as from Ambrina. One specimen in Coll. Ex. Exp. is from the Sooloo Islands.

22. *CARPOPHAGA NORFOLCIENSIS* (Lath.) Temm. Pl. Col. 186. Gould B. of Aust. v. pl. 59.

Columba norfolciensis, Lath. Ind. Orn. Supp. p. 60.

Columba leucomela, Temm. Pl. Col. iv. p. (liv. 32.) Knip and Prev. Fig. iii. pl. 28.

No frontal knob, but with the membranes of the nostrils large. Head, neck and wide medial portion of the under parts white, in many specimens tinged with dull yellowish. Upper parts of the body, wings and tail brownish black, tinged ashy; plumage of the back, rump, upper tail coverts and upper wing coverts tipped with metallic purple; sides, flanks and under tail coverts dark cinereous mixed with dull yellowish. Other specimens, apparently young, with the head, neck and under parts mixed with light brown, which predominates on the abdomen.

Numerous specimens in Coll. Acad. from Australia.

There are in the collection of the Academy various other species that have been included in the genus *Carpophaga* by authors, but the above are those only of which I have seen specimens, and which appear properly to belong to it.

Columba gularis, Quoy and Gaim. Voy. Astrolabe, Ois pl. 29, which is in the Coll. Acad., is a *Ptilinopus*. *Columba vitiensis*, of the same authors, Voy. Ast. Ois. pl. 28, of which the adult is in the Coll. Acad., (the young bird being represented in the plate in Voy. Ast.) is more properly a true *Columba*.

In the above list I have stated the presence or absence of the frontal knob or protuberance, which appears to be characteristic of some species, but not without suspicion that its presence, or at least its size, may depend on season, and may then be sexual only and confined to the male birds. It has to me much the appearance of an appendage indicative of the season of courtship, and its true value as a character is an interesting problem.

The species above alluded to, of which the specimens are in the collection of the Exploring Expedition, will be figured in the Atlas to the volume on the Quadrupeds and Birds of that Expedition, which I am preparing, and which will be published during the ensuing year.

Herrerite, identical with Smithsonite.

By Dr. F. A. GENTH.

When Herrera described an apple green mineral from Albarradon in Mexico, having a distinct cleavage parallel with the planes of a rhombohedron, as a combination of 55.58 p. c. of tellurium, 12.32 p. c. of sesquioxide of nickel and 31.86 op. of carbonic acid, all mineralogists, who were conversant with the laws of chemical combination, considered it as nothing more than a mechanical mixture, though the description appears to have been that of a simple substance. Afterwards, Del Rio pronounced it "carbonate of zinc, with some nickel and cobalt," and this being a very probable composition, which also answers very well to the physical properties, it was generally considered a Smithsonite, though,

(no other examination having been made of it,) as doubtful. I received, through the kindness of Dr. J. L. Le Conte, a genuine and perfectly pure piece of the mineral, which I have carefully examined. The physical properties of it agree very well with those given by Herrera; with regard to its chemical composition, Herrera has the merit of having correctly discovered in it the presence of carbonic acid; Del Rio, that of having found in it the oxide of zinc. With regard to the other constituents, both were mistaken. A qualitative analysis has shown that this mineral contains carbonic acid, oxide of zinc, oxide of copper, oxide of manganese, magnesia and lime, but no traces of any other substance. The quantitative analysis was made with the usual methods.

B. B. in a tube it blackens and does not give any "sublimate, which condenses in transparent drops," (as Herrera stated,) but none at all. Upon charcoal in the R. F. it blackens, and covers it with white incrustations, having a steel-blue margin, which are yellow as long as hot; and which, when moistened with cobalt solution and re-heated, become green. The mineral itself does not become green, but brownish black; and after having received a good reducing heat, it shows under the magnifier, and when powdered in an agate mortar, metallic copper. With borax, it gives distinctly the copper reactions. Dissolves in acids slowly, with effervescence. After weighing, I have carefully examined all the separated substances for their purity, but neither traces of tellurium, nor those of cobalt and nickel, could be detected.

0.6226 grs. of the mineral gave:

0.3783 grs. of oxide of zinc, or	60.76 p. c.	Zn O ;
0.0137 " " oxide of copper, or	2.20 "	Cu O ;
0.0062 " " protosesquioxide of manganese, or	0.93 "	Mn O ;
0.0025 " " pyrophosphate of magnesia, or	0.14 "	Mg O ;
0.0092 " " carbonate of lime, or	0.83 "	Ca O.

Herrerite is, therefore, nothing else but a cupreous Smithsonite, and its composition the following:

Carbonate of zinc, ...	=	93.74 per cent.
" " copper, ...	=	3.42 "
" " manganese, ...	=	1.50 "
" " magnesia, ...	=	0.29 "
" " lime, ...	=	1.48 "
		100.43

Chemical Notices.

By CHARLES M. WETHERILL, Ph. D., M. D.

On the occurrence of Gold near Reading.—In a paper upon the occurrence of gold in Pennsylvania, read before the American Philosophical Society, and published in vol. x. of their Transactions, I alluded to an auriferous quartz in the neighborhood of Reading, Pa., and the examination of which afforded me slight, though uncertain traces of gold. I stated at the close of the article, that "I had no doubt that a more careful examination of the rocks in the vicinity, would yield affirmative results in an examination for this metal." The views then expressed have proved to be correct. Last summer, Mr. Philipps, a mining geologist, in searching for iron ore on the farm of Mr. Entlich, a few miles eastward from Reading, and of Mr. Jonathan Deininger, about a mile from the same place on the western slope of Penn's Mount, detected gold by washing specimens of the ferruginous quartz. I called upon Mr. Deininger, who showed me the specimens in his possession, and gave me some of the quartz rock from his farm. Mr. Deininger showed me a specimen of gold, in weight I should judge between one and five centigrammes, which was broken by himself out of the rock.

I have noticed this quartz scattered over the ground in various parts of Berks county, some specimens bearing very strong gold characteristics; they are partially water worn, but the angles are moderately sharp; on breaking them open the enclosed masses of dark oxide of iron are apparent.

At the angle formed by the intersection of 8th and 9th streets, Reading, there is a heap of stones gathered from the adjoining fields, containing about two per cent. of pieces of this quartz rock; I brought home specimens with me for examination. These specimens, together with those obtained from Mr. Deininger's field by myself, were pulverized and washed, but without, in any instance, detecting gold. They were then smelted with litharge and charcoal, and the button of lead cupelled. Of course, the litharge was examined for gold. The 30 gramme button of lead from about 100 of litharge gave a silver button of 0.00575 grms., and which contained no gold.

A. 8th street quartz—65 grammes + 130 litharge + 10 black flux gave a lead button of 14 grms., and silver 0.0075, which contained gold beyond a doubt, as judged from its lustre and resistance to nitric acid.

B. Another portion of quartz from the same locality—200 grms + 400 litharge + 0.5 charcoal dust, gave lead 17 grms.; silver 0.00875 containing gold, though not as distinctly as the last.

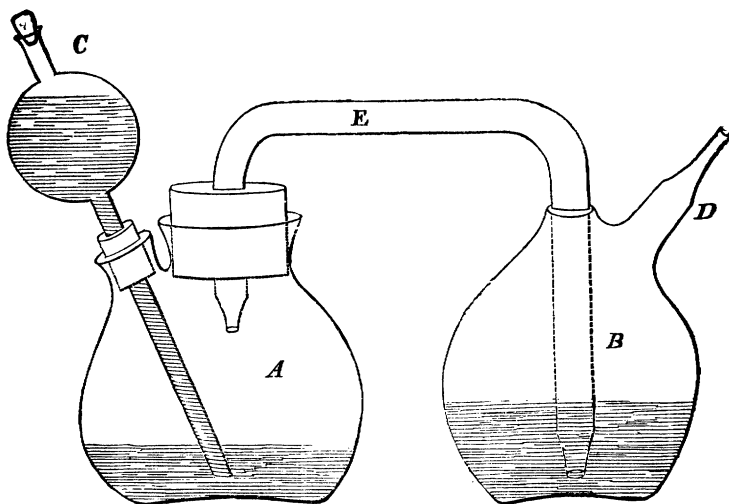
C. Quartz from Mr. Deininger's fields—185 grms. + 370 litharge + 0.5 charcoal gave 20 grms. of lead containing 0.00825 silver, in which no gold could be detected.

On the Incineration of Filters in Analysis.—In order to burn off the filters from certain precipitates in quantitative analysis, considerable patience is required and loss of time involved, owing to the presence of salts in the pores of the filter. Fresenius, in his last edition of Quantitative Analysis, counsels patience in such cases, and to facilitate the combustion by pressing the filter against the hot crucible by a platinum wire. I have found it advantageous, in such cases, to use oxygen gas, as is done in some of the methods for preparing ashes of plants for analysis. The results are good, and none of the contents of the crucible are lost. The phosphate of magnesia-ammonia filter is thus burned off in quite a short time, and without any loss of phosphoric acid. After the filter is carbonized, the lid is partially removed from the upright crucible, and a tube (platinum I use, but glass will do nearly as well,) with an orifice of one mm. in diameter, delivers oxygen gas from a small vulcanized caoutchouc bag, so slowly that it mingles with the air in the crucible and effects the combination quietly. A crucible appears to be in the worst position possible for oxidation in the manner in which it is situated in the flame, for the rising air currents are unfavorable for combustion in the bottom of the crucible, and the air which does enter is diluted with the products of combustion. Though this may be partially improved by an inclined position of the crucible and lid, it is not obviated, and oxygen gas seems to afford a remedy with less risk than nitrate of ammonia.* I have not yet found any objection to its use from practice, and pure oxygen is so readily obtained from the commercial chlorate of potassa by using the wash bottles described in my article on "organic analysis by gas," and keeps so well in vulcanized caoutchouc bags that I would recommend it to a trial.

Apparatus for the Analysis of Carbonates.—Both in Fresenius' late edition of Analysis and in Rose's greater work are described apparatus for the determination of carbonic acid by Fresenius' and Wills' process, using fine balances. About a year and a half ago I described, in the Journal of the Franklin Institute, a very convenient apparatus for this purpose, which as it appears not to have come to the notice of chemists generally, and as those of my chemical friends who have tried it have approved of it, I will here shortly describe.

* Schultze (Fresenius' Anal.) proposes to burn filters and plant ashes by creating an air current over the crucible by means of a broken retort neck.

† Franklin Inst. Jour., Aug., 1854, page 107.



The accompanying figure, which is of the natural size, will explain itself; the part E B D is the drying apparatus, containing sulphuric acid and is of one piece, the tube E being melted into the flask B. In making this part of the apparatus I think it preferable to join E to A before blowing the bulb. The apparatus which I made myself in this way, and with which I experimented, remained sound, while of a dozen made by a professional gentleman, joining E and B after the bulb was blown, six cracked at the joint. The carbonate is placed in A with water, and C, with a wax stopper, contains hydrochloric acid in case of insoluble sulphates, or is empty when the oil of vitriol of B is employed to effect the decomposition. The tightness of the joints is ascertained and the analysis carried on as in Fresenius and Wills' apparatus. The lead glass apparatus which I constructed myself weighed, empty, 36 grammes, and when charged for analysis and with much sulphuric acid weighed, together with the chloride of calcium tube-hook of Oertling's balance which it fits, between 50 and 60 grammes. An apparatus of German glass, made by a glass blower, weighed, with its cork and empty, 20 grms. This apparatus unites lightness with great strength, which is at once felt on handling the apparatus, which arises from the nature of the joint of E with B, and from the construction of the decomposition flask A which allows E to be made of a piece of stout tube. In its construction it is simpler than any that I have seen, not excepting Geissler's (*Jour. f. pr.*, ch. LX., 35,) which has one more joint, and that a ground glass one. A being entirely separate may be washed and dried ready for a fresh analysis in a couple of minutes; the sulphuric acid in B will generally last for two analyses, and is very easily emptied and replenished. A small sucking tube with perforated cork fitting the capillary end of the tube D, is used to bring acid on the carbonate, to draw air through at the close of the analysis, and to fill and empty B with oil of vitriol. The joints are the firmest possible in this apparatus, and the connections easily made, owing to single tubes passing through the two corks, which corks being very small may readily be obtained of perfect quality. I have not found any error to arise from the hygroscopic nature of the corks; but if such be feared, it is easy to coat their outsides with sealing wax varnish. The following are the experimental results with the apparatus:

About one gramme of perfectly pure (tested) carbonate of soda yielded, in

two experiments, a per centage of carbonic acid 41.42 and 41.35, which differ 0.07 from each other, and the mean 41.38 differs 0.01 from the theoretical per centage 41.37, sodium being taken at 23.178.

Carbonate of lime, (precipitated commercial,) which contained sulphate and iron, gave the following results, the carbonic acid being evolved by nitric:

0.63025 and 0.61625 grammes gave a per centage of carbonic acid = 41.65 and 41.70, difference 0.05. The theory for *pure* carbonate of lime requires 43.88.

In order to ascertain the error by evolving the carbonic acid from lime by sulphuric acid, two more experiments gave 38.79 and 39.17 carbonic acid.

In order to ascertain whether the carbonic acid remaining in the flask A could be expelled with a *moderate* boiling and thus obviate the necessity of the air tube C, three analyses were made with pure carbonate of soda (the same used as above) which gave the following results: 0.83, 0.859 and 1.0193 grammes gave a per centage of carbonic acid 40.93, 40.34 and 40.49.

Rectification of Mr. T. A. Conrad's "Synopsis of the Family of NAIADES of North America," published in the "Proceedings of the Academy of Natural Sciences of Philadelphia, February, 1853."

By ISAAC LEA.

On my return home a few weeks since from a long absence in Europe, I found, when looking over the Proceedings of the Academy, a new Synopsis of the North American Naiades by Mr. Conrad.*

Finding in it numerous errors in regard to the dates of my memoirs and the synonymy of my species, I desire that the correction of part at least of these errors may reach the scientific public by the same channel. I think it will be difficult for anyone to understand how so many errors of dates, &c. could have been written down. I had hoped that the day had gone by among us here, when any other object than the true interests of science should have existed. It has been very painful for me to be called upon, as I am, to defend my scientific labors from an attempt to deprive me of much of that which I have won by patient labor and continued assiduity for so many years, and must protest against the recognition of the incorrect dates which I shall point out to the satisfaction, I trust, of every man of science who takes any interest in the study of this branch of Natural History.

I do not mean to correct the synonymy of this Synopsis, but I trust to satisfy every one, that it can be of no value whatever where the dates are so erroneously stated. For myself, I shall rest until I have further light on the synonymy of my Synopsis of this Family published in 1852, which I believe will be found in the main to be correct. It certainly was my intention to do justice to every naturalist, and whenever I shall be shown not to have done so I will most willingly make reparation.

Mr. Conrad commences his Synopsis by saying, "The present attempt to give a synonymy of the North American *Naiades*, has originated from the absence of dates and references in Mr. Lea's memoirs. To render strict justice to every author according to date of publication, is not only the duty of the naturalist, but a necessity of science." (Vol. 6, page 243.)

If it were true that my memoirs were without "dates and references," and the truism of the duty of naturalists to render justice was complied with by the author, there would have been no occasion for me to trouble the Academy with a rectification. He usually takes the date of the title of the *Volume* of the Transactions of the American Philosophical Society, where the species may have been described, while the volumes published by the Society, as they are almost universally by all scientific bodies, were really issued *in parts* at different times and generally in three parts. Thus when part first of any volume was issued, the Society distributed copies immediately to their subscribers and to all the principal socie-

*Vol. 6, p. 243, Feb. 8, 1853.

ties in Europe and in this country; and, when I have had in such part a memoir, I had two hundred and fifty copies printed for my own use, one hundred and fifty of which I at once distributed at home and abroad where I thought they might be useful to science. When part second of the same volume may have been printed, the same process took place, and when part third was ready, it took the same course, with this addition, viz. a title page for the *whole volume* was printed for the convenience of those who might choose to have their three parts bound into a volume, and this title bore the date of the last part. Thus most of these copies of my descriptions with figures, may have been in the hands of the Zoologists of Europe and America for two or three years prior to the date at which Mr. Conrad has stated them as being published. In addition, he usually pays no regard to the dates of my descriptions printed in the Proceedings of the American Philosophical Society or otherwise, prior to their subsequent issue in the Transactions. Thus on the 18th August, 1843, I read a number of descriptions before that Society and permission was granted to me to print them at once. The following day, Aug. 19th, these descriptions were printed and circulated. Now Mr. Conrad in his synopsis dates these as published in 1846!* three years after they were actually issued printed. The rule, however, which the author says he will adopt of taking the date of the whole volume, when the date of publication of each species cannot be otherwise obtained, is not always followed, for the date in the title page of Vol. 3d is 1830, while the following species described in this volume, *U. occidents*, *U. rubiginosus*, *U. multiradiatus*, and *U. securis*, he dates in 1832, and *U. heterodon*,† in the same memoir, he dates 1833; thus species described and printed in the same memoir, are by him often dated in *different years*.

The question as to fixing with precision the date of discovery of a new form, has been one of anxiety and doubt among men of science. For myself I have never felt satisfied that it was judicious to make any change in the long received rule of permanently fixing the date of publication‡ to be that, when the paper was read before and deposited with the officers of a learned Society, with a view to printing. Receiving as authority the dates issued by individuals in publications is exceedingly dangerous. There may be antedates, and these can rarely be detected. In the case of a deposit of a paper with a learned society, intended for publication, and a record being made of it at the time, there cannot be any probability by collusion of the officers to make a change.

As much of Mr. Conrad's Synopsis involves the names and claims of Mr. Rafinesque, it becomes necessary to say something in explanation of my having in my papers adopted but few of his names. It has been asserted that I wished to deprive this unfortunate naturalist of the credit of his labors. This I must deny. I believe I was the very first writer who, coming into this field of inquiry, showed a desire to do him justice. When I commenced, in 1827, the series of papers which has grown since to many volumes, I did not find a single species credited to Rafinesque by Mr. Say or Mr. Barnes; but my friends, Dr. Griffith, Mr. Hyde, Mr. Peale, Dr. Green and Mr. Stewart, all my predecessors, thought they could recognise, probably, three or four of his species. In 1831, Professors Short and Eaton, of Transylvania Medical College, Lexington, published in the *Transylvania Journal of Medicine* a descriptive catalogue of the *Naiades* then known to them, having collected quantities of them in Kentucky, Ohio, &c. As Mr. Rafinesque had been a professor in the same college, they very naturally desired to give him all they could identify, and out of thirty-five species in their list, Mr. Rafinesque

* These are *U. Buckleyi*, *U. Buddianus*, *U. minor*, *U. amygdalus*, *U. fuscatus* and *U. neglectus*.

† Read before the American Phil. Soc. Mar. 6th, 1829.

‡ Publication does not necessarily mean printing and issuing a notice of a fact or a discovery. Dr. Webster says, that publication is a "notification either by words, writing, or printing," and Johnson defines it "the act of notifying to the world."

has but six given to him, viz: *mytiloides*, *torulosus*, *metanever*, *torsus*, *triqueter* and *scaleni*, the first, fourth and sixth of which Mr. Conrad now rejects.*

I went to the task of examination with the sincerest desire of making out as many as possible of Rafinesque's species; and having his original work before me, went over it carefully four different times, but with nearly the same result as my predecessors. I gave it up in despair, and lost my labor; and I think I shall show further on, that Mr. Conrad himself affords the test evidence of the utter impossibility of satisfactorily fixing Mr. Rafinesque's species. It is now thirty-four years since he published his memoirs, and for nineteen years Mr. Conrad has had the advantage of having shells labelled by, he says, Mr. Rafinesque himself.† A single species, the *Unio triangularis* Raf. of Mr. Conrad's Synopsis of 1834, with its synonyms, will convince any unprejudiced person of the impossibility of the attempt made to establish Mr. Rafinesque's species.‡

Dr. Griffith, Mr. Hyde and Mr. Peale have often told me that Mr. Say would not listen for a moment to such an idea as giving any regard to his species, and the works of Mr. Say fully justify this fact by the total absence of any recognition of his authority for a single species, until some fourteen years after Mr. Rafinesque's publication, he was induced to make his "Synonymy of the Western, North American species of the genera *Unio* and *Alasmodonta*," recognising many of the species of Rafinesque, and denying to me a single one.

The feeling of the western conchologists was almost universally against the attempt to introduce Rafinesque's names, and most of those who had studied these shells, and written on them, or were writing on the subject, addressed me on the occasion, in utter despair of making them out.¶

The principal conchologists of Ohio, in April, 1836, agreed to form "a list to be adopted by western conchologists," and after consulting together on the subject, a manuscript list was sent to me by Judge Tappan, containing 112 species of *Uniones*, three only of which are given to Rafinesque. In August following, they more maturely considered the subject, and agreed to the nomenclature of a list in which a single species only is credited to him, and this with a mark of doubt.

In a letter to me from Prof. Kirtland when he undertook the Zoological portion of the Ohio State Survey, he says, "I am particularly pleased with your arrangement of the Naiades § It is altogether preferable to anything of the kind that has ever come before the scientific public, and will bear the test of the closest scrutiny and the severest criticism." * * * "I was unwilling to complete my report on our conchology until I could avail myself of the information which it contained. I shall adopt your names and arrangement with hardly an alteration." When this important State Report came out in 1838, in the whole list of nearly one hundred species of the family *Naiades*, there were but two accredited to Rafinesque, viz: *metanever* and *mytiloides*, the latter of which Mr. Conrad does not admit as a species in his Synopsis, but now declares it to be a synonym to *clavus* Lam.

Notwithstanding the decisions of the ablest of the western zoologists, there was still an attempt to substitute by "guessing," the names of Rafinesque. This induced

* Mr. Poulson says in the preface of his translation, (Oct. 1831.) that but four of Rafinesque's species were "known by his names, either in the works of American authors or in our collections."

† This was done some twelve years after the descriptions were published, and at a time when I believe no one in any branch of science considered him as reliable authority. He had been, according to Dr. Binney, in a "diseased state of mind" for thirteen years. I believe no one pretends to say that the original specimens described by Rafinesque are in existence.

‡ See further on the numerous changes made by Mr. Conrad in the position of this name and its abandonment at last.

¶ Dr. Kirtland, Mr. Buchanan, Dr. Ward. Dr. Hildreth, Judge Tappan, Mr. Clark and some others. See Asa Gray's account of Rafinesque's Botanical Writings, (Sill. Journ., 1841.) where he says that "half his genera and species do not exist at present," and that he described in "Natural History style, twelve new species of thunder and lightning."

§ Alluding to my Synopsis of the family *Naiades*, 1836, first edition.

the members of the "Western Academy of Natural Sciences of Cincinnati," in January, 1849, to review the subject, with an intention of settling this matter of nomenclature. With that Society there could be no partialities, there could be no reason for favoritism, any more than with the Reporter of the State, or the other zoologists who had devoted so many years to the study of these interesting molluscs. They went to the task with no other object than to "render strict justice to every author." The result was published in a small work, "Catalogue of the *Unios*, *Alasmodontas*, and *Anodontas* of the Ohio river and its northern tributaries, adopted by the Western Academy of Natural Sciences of Cincinnati, January, 1849." There were admitted sixty-seven distinct species, of which three only are ascribed to Rafinesque, *U. flavus*, *U. flexuosus* and *U. nodulatus*.*

If I had been singular in my inability to make out Rafinesque's species and to recognise him as authority, I should not, perhaps, have ventured alone, but the exception is on the other side. If we turn to the admirable work of the late Dr. Binney, on the "Terrestrial Molluscs of the United States," and there is not a more able and judicious writer on the subject, we find that he wholly discards Mr. Rafinesque as being worthy of any regard. He says that the papers of Rafinesque "are not deemed worthy of any consideration," (p. 36,) and further on he says that "his diseased state of mind was observed about 1818" (p. 44); and again at p. 48, he says, as the genera and species proposed by Rafinesque "are considered to be destitute of authority and entirely unworthy of notice, no mention of them will be made in the text." He was in the habit of naming and describing species which he never saw, as mentioned by Major LeConte, and a very remarkable case of this kind exists in his publication of his genus *Tremesia*, in the same paper with the *Navades*. He described it as a *trivalve fresh water shell* living on the rocks, near the mouth of the Ohio, like the *Patella*. He described the animal and shell, and figured them (p. 54). But it is not pretended that he ever saw either, and I doubt if there be one zoologist in the United States who believes in the existence of the thing at all. In the American Monthly Magazine, Rafinesque, in a previous notice, describes it under the information of Mr. Audubon. He does not himself pretend to have seen it.

When I was in Paris, in 1832, Baron Ferussac told me that I was wrong in admitting a single species of Rafinesque's if I had any doubt myself about them. He was convinced himself that he could not identify with certainty a single species. In the Magazine de Zoologie, p. 13, he says that "he had received from him the same shells under different names, and others with the names evidently not those which were given to them in his Monography. Therefore there results inextricable difficulty for the determination of his species, to establish an exact synonymy between him and others, who since have occupied themselves with the mussels." It is true that the Baron subsequently made a catalogue in which he gave precedence to many of Rafinesque's names; but it must be remembered, that this was done under the impression that these were identified as the original specimens described by him, and not, as now understood to be the case, new labels to other specimens, some twelve or fourteen years afterwards. We have seen above that Ferussac could make nothing of the labelled specimens sent to him by Rafinesque, "marked by his own hand," which marking Mr. Conrad assumes as definite, while in reality I do not think them entitled to the least consideration.

*Stronger evidence could not be presented of the futility of the efforts made by naturalists to give Rafinesque what they could by careful examination. The earlier conchologists thought they could make out four of his species, *torsus*, *mytiloides*, *metanever* and *scalenus*. Professors Short and Eaton gave him *mytiloides*, *torulosus*, *metanever*, *torsus*, *triqueter* and *scalenus*. Judge Tappan, with the best disposition, gave him, *metanever*, *verucosus* and *tuberculatus*, but all with doubt. In the list made by the western conchologists there is but one, *U. viridis*, the description of which Judge Tappan says equally well applies to *iris*. In Dr. Kirtland's State Report, he accredits two to Rafinesque, *metanever* and *mytiloides*, and the Western Academy of Natural Sciences give him only *flavus*, *flexuosus* and *nodulatus*, not one of which is given to him by the other authorities above quoted. Could anything, therefore, be more uncertain?

Many years ago the distinguished zoologist, Mr. Swainson, sent to me from London, for the purpose of identification, a number of *Uniones*, which he had received from Rafinesque, but of which he could make nothing. The confusion of pieces of valves and names formed such a mass as utterly to defy any attempt at recognition of his species. I returned them, totally unable to identify them with any satisfaction. Dr. Ward said that Rafinesque's descriptions and outline "would equally well apply to six or eight different species." These facts fully account for the difference of judgment between Mr. Say and Mr. Conrad in their Synopses, both published in this city, dated April 1834. Even they with the specimens before them marked by Rafinesque himself, could not agree in very many cases. Mr. Say considered that *castaneus*, Lea, was *lavigatus*, Raf., while Mr. Conrad placed *lens*, Lea, as a synonym to *lavigatus*. Mr. Say makes *zigzag*, Lea, and *donaciformis*, Lea, synonyms to *nervosus*, Raf., while Mr. Conrad doubts that *zigzag* is synonymous with *nervosus*, and makes *donaciformis* synonymous with *truncatus*, Raf., which (*donaciformis*) in his appendix, the next year, he considers a *distinct species*, but which in the new synopsis of 1853 he placed with *zigzag*, as synonymous with *nervosus*, Raf.!

Without going further into long statements of discrepancies between Mr. Say and Mr. Conrad in regard to establishing Rafinesque's species, it will be enough to say that in the Synopsis of Mr. Say it will be found that out of sixty-one descriptions by Rafinesque he gives him thirty-eight species, and by comparing these with the new Synopsis of Mr. Conrad, eighteen of them are more or less different in their synonymy, or are entirely dismissed from the list of species.*

Not wishing to devote too much time or space to tracing out the changes of opinion by Mr. Conrad from time to time in attempting to substantiate Rafinesque's species, it will be sufficient to trace a single one through the various sinuosities which he has carried it to this period. I do not know how many there may be like it, but I think it ought to be sufficient to satisfy any one, that synonyms based on such uncertain authority ought to be most carefully scrutinized.

The "synoptical table of the species of American Naiades with Synonyms," April 1834, was got up by Mr. Conrad with a view, he says, to "rectify the confused nomenclature of American Naiades." How successfully this has been carried out may be seen by tracing this only one which I have attempted to follow entirely through with its connections. In the list of species (p. 72) Mr. Conrad sets down *U. triangularis*, Raf. as an established species, and adds as synonyms *lateralis* Raf., *sintoxia* Raf., *pachostea* Raf., *mytiloides* Raf., *ruber* Raf. and *pyramidatus* Lea. Eighteen months afterwards, this "retification of confused nomenclature, was found to require itself a rectification, and we find in an appendix dated Oct. 1835, under the caption of additions to and corrections of, the catalogue of species of American Naiades," that *ruber* Raf. is not a synonym to *triangularis*, but really a species, and that *pyramidatus* Lea, is a synonym to it; also, that *pachostea* Raf. was erroneously placed as a synonym to *triangularis* Raf., it too becomes a type, and *Cooperianus* Lea, is assigned as a synonym to it. *Mytiloides* likewise is no longer a synonym to *triangularis*, but it becomes one to *clavus* Lam. The other three are as yet still considered synonyms to the type *triangularis*.

*It might be better to cite a few of those to show at a glance, how much discrepancy of opinion there is between Mr. Say and Mr. Conrad, and to show how dangerous it is to science to admit such "guessing" where nothing should be set down as certain that could not bear the test of scrutiny.

<i>Unio niger</i> Raf.	Mr. Say says is	<i>cuneatus</i> Bar.	Mr. Conrad says it is	<i>incrassatus</i> Lea.
" <i>fasciatus</i> Raf.	" " "	" <i>multiradiatus</i> Lea.	" " "	" <i>subangulatus</i> Lea.
" <i>flexuosus</i> Raf.	" " "	" <i>pileus</i> Lea.	" " "	" <i>foliatus</i> Hild.
" <i>obovialis</i> Raf.	" " "	" <i>ebenus</i> Lea.	" " "	" <i>solidus</i> Lea.
" <i>subrotundus</i> Raf.	" " "	" <i>rotundatus</i> Lam.	" " "	" <i>striatus</i> Raf.
" <i>triangularis</i> Raf.	" " "	" <i>ellipsis</i> Lea.	" " "	does not admit <i>triangularis</i> as a species.
" <i>cuneatus</i> Raf.	" " "	" <i>patulus</i> Lea.	" " "	" <i>cuneatus</i> as a species.
" <i>gibbosus</i> Raf.	" " "	" <i>perplexus</i> Lea.	" " "	" <i>gibbosus</i> as a species.
" <i>torulosus</i> Raf.	is not admitted by Mr. Say as a species.		Mr. Conrad says it is	<i>gibbosus</i> Raf. and <i>perplexus</i> Lea.

ris Raf. But, in the following year, June 1836, in his "Monography of the Family Unionidae" p. 41, Mr. Conrad describes and figures *mytiloides* Raf. as a type, and assigns to it as synonyms *ruber* Raf. *pyramidatus* Lea, and *cardiacea* "Say of Guérin," and in his observations on this shell, now first considered by him to be a species, he says, "this common species, since its first discovery in the Western waters, has always been known by the name we have adopted!"* After these three attempts one might reasonably conclude that the synonymy of *triangularis* was perfectly settled to the satisfaction of the author of the Synopsis, but such proved far from being the case. Seventeen years of further experience found Mr. Rafinesque's species "marked by his own hand," did not make his own species right, and we have in Mr. Conrad's Synopsis of 1853, a remodelling of these names of the most extraordinary kind. *Triangularis* which in 1834 was declared to be a type with six synonyms is *entirely dismissed*, not recognized even as a synonym. *Lateralis*, which then was pronounced to be a synonym to it, has also been dismissed. *Pachostea*, another of the synonyms, but which was in 1835 raised to the rank of a type, is sunk into the same oblivion. *Mytiloides* which had been in 1836 raised to a species, from a synonym in 1834 to *triangularis*, and in 1835 changed to a synonym to *clavus* Lam., is continued a synonym to *clavus*, with some entirely new companions, viz., *scalenius* Raf. *cuneatus* Raf. and *modioliformis* Say. We find *sintoxia* which had remained for nineteen years, during all the changes, a synonym to *triangularis* is now *decided to be a species*, and it assumes that rank without any synonym. *Ruber* is once more considered to be a species. It was in the Synopsis of 1834 pronounced to be a synonym to *triangularis* Raf. In 1835 it was considered a species, and *pyramidatus* Lea assigned as a synonym to it. In 1836 it was degraded to the rank of synonymy again, and had *mytiloides* Raf. for its type. In 1853 we find it again promoted to the rank of a species, with *pyramidatus* Lea, and *coccineus* Jay, as synonyms! And will it be believed, after all these various attempts to "rectify" what was pronounced with so much formality to be the object of the writer, and to "render strict justice to every author," that he says, in a supplementary note, on this *U. triangularis* Raf. in this Synopsis (p. 267) that "Mr. Poulson's cabinet contains no authentic specimen of this species, which is one I have never identified." What must we think of such an admission? In 1834 he forms a Synopsis under the declaration that he has at his command the specimens marked by Rafinesque himself. In this Synopsis he declares *triangularis* Raf. to be a species with six synonyms. Through the course of three years he separates from these synonyms three of them, which he raises to the rank of species, and then at the end of nineteen years, he drops the important type entirely, and candidly informs us in a note that it is a species he "had never identified!" and in the same note he says that "*pachostea*, *Cliffordiana* and *lateralis* are also uncertain species."

It will strengthen the evidence of the utter futility to attempt the establishment of Rafinesque's species, by looking at Mr. Say's Synopsis, which had the same object in view. He declares this *U. triangularis* Raf. to be a distinct species, and assigns to it as a synonym *U. ellipsis* Lea.† and he pronounced *mytiloides* Raf. a species which Mr. Conrad at the same time placed as a synonym to *triangularis* Raf.‡

* Subsequently it will be seen that this species is degraded in the synopsis of 1853 again into the ranks of synonymy. I believe I was the first to give it a place (1829) in the lists made to endeavor to throw light on the subject, and I continued it in the various editions of my Synopsis in 1836, 1838 and 1852, more because a certain triangular shell was generally known to us under this name of Rafinesque's, than that his description really fitted it.

† Mr. Say had previously, in his American Conchology 1831, considered *U. ellipsis* Lea, as being established, and he had figured and described it as mine.

‡ If it were necessary to have further evidence of the uncertainty of Rafinesque's species, we might trace another of these numerous discrepancies, taking *scalenius*. Mr. Conrad in his Synopsis 1834 gives *scalenius* the rank of a species, giving as synonyms *cuneatus* Raf. and *patulus* Lea. In his appendix 1835 he makes *scalenius* Raf. and *modioliformis* Say. synonyms to *clavus* Lam. In 1838, Monography p. 92, he describes and figures *patulus* Lea., making it a distinct species, and in his Synopsis 1853 he adds *mytiloides* to the synonym of *clavus* Lam., having in 1836 considered *mytiloides* a distinct species, but he is still not sure that *cuneatus*

I shall be much surprised if the exposition of this species, *triangularis* Raf. will not satisfy all unprejudiced zoologists of the hopelessness of these attempts to establish Rafinesque's species of the *Naiades*.

We come now to by far the most important part of Mr. Conrad's Synopsis—the dates. He commences in the first line of his Synopsis, with the avowed purpose, in forming it, to supply an assumed “absence of dates and references in Mr. Lea's Memoirs,” and he promises to “render strict justice” to every author according to date of publication. Any one unacquainted with my memoirs, would suppose from this that some at least were without dates; such is not the fact; every one of them running through a course of twenty-five years is dated. The record of their date is in the minute book of the American Philosophical Society and the record of the day on which they were read and deposited with the Society, for publication, is printed at the caption of every one of the numerous memoirs, put there by the officers of the Society. The day on which all these memoirs were issued printed, is not easily ascertained, and this gives Mr. Conrad a field for assigning to them erroneous dates, as we shall see in the sequel. It is a mere matter of figures, but it will be seen that many are wrongly put down in his Synopsis. During the first ten or twelve years that I was engaged in writing these memoirs, no one considered there could exist any doubt, as to an author being entitled to his discovery; if it was communicated to a learned Society, and really was a discovery. It being issued, printed, afterwards, was considered a diffusion of a knowledge of it. The Society then printed no “Proceedings” to give immediate notice of such discoveries abroad. It was not until in 1838 that the “Proceedings” were commenced. After this period it was generally thought best to print in the “Proceedings” the simple descriptions of the species in a memoir, and the whole, in extenso, was subsequently inserted in the Transactions.

Mr. Conrad has declared that he will not regard the date of the reading of any such described species, and acting under this principle he cuts out a large number of my names, classifying them among the synonyms. But he is by no means satisfied with this reduction. The date of a very large number is erroneous as to the time of their being actually printed and circulated, as I have mentioned in the first part of this paper, that is, by assuming the date of issuing the *first* part of a volume to be that, when the *last* part was issued, while the first part may have been circulated some years before.

In order to occupy as little space as possible, I will endeavor to tabulate these errors. To take up my species in the order in which they occur in his Synopsis and correct them, seriatim, would require great space. I commence with my first memoir in 1827, and proceed chronologically to 1852.

Unio lanceolatus Lea. Dated by Mr. Conrad, 1832
“ *irroratus* Lea. “ “ “ “ †1852

{ Published in memoir read before and deposited with the Am. Phil. Soc., Nov. 2, 1827, and printed in Trans., Vol. 3, p. 259. Distributed early in 1828.† Noticed in Silliman's Jour. Oct. 1829, and the Trans. cited for 1827.

Raf. is not distinct, as he says in a note that it may be a distinct species. Mr. Say in his Synopsis makes *scalenius* Raf. and *cuneatus* Raf. both distinct species.

*The four other species of this memoir are given by Mr. Conrad without any date.

†This may be a typographical error and intended to be 1832, the same as *lanceolatus* above it. Giving Mr. Conrad the benefit of this, it will still be found that he has dated these two species *five years* after they were read to the Society, *four years* after they were printed and issued, and *two years* after the date of the title page of the whole volume.

‡A correspondent in Cincinnati, under date of April 25th, 1828, acknowledges the receipt of this paper, and comments on the descriptions and the plates, and particularly the anatomical parts. He had received impressions of the plates in the previous December.

Unio occidens Lea.	Dated by Mr. Conrad,	1832?
" rubiginosus Lea.	" "	1832
" heterodon Lea.	" "	1833
" multiradiatus Lea.	" "	1832
" securis Lea.	" "	1832

Published in memoir read before and deposited with the Am. P.S. March 6th, 1829, and printed in Trans. v. 3, p. 401. Distributed in May or June 1829. The receipt of it, with comments, is acknowledged in a letter from Cincinnati, June 27th, 1829, and it is noticed in Silliman's Journal, vol. 16 1829.

Unio acutissimus Lea.	Dated by Mr. Conrad, Aug.	1834
" asper Lea.	" "	1832
" pustulosus Lea.	" "	1832
" obesus Lea.	" "	1832
" castaneus Lea.	" "	1832
" varicosus Lea.	" "	1832
" Congaræus Lea.	" "	1832
" decusus Lea.	" "	1832
" glans Lea.	" "	1832
" fabalis Lea.	" "	1832
" lens Lea.	" "	1832
" cuprinus Lea.	" "	1834
" pustulatus Lea.	" "	1832
" ebenus Lea.	" "	1832
" stapes Lea.	" "	1832
" trapezoides Lea.	" "	1838

Published in memoir read before and deposited with the Am. P.S. May 7th, 1830, and printed in Trans. v. 4, p. 63. Distributed in the latter end of 1831, and acknowledged by correspondents as received in that year. A long review of this, and the supplement read May 20, 1831, appeared in Silliman's Jour. for Jan. Feb. and March, 1832. It will be observed that Mr. Conrad makes *three dates* for the species described in this memoir, not one of which is correct on his own principle of the issue of printed copies being the time of date. This memoir and the following supplement having eighteen plates and nearly fifty species, all colored, required a long time to finish, hence the delay between reading the memoir and the issuing of it complete.

Unio angulatus Lea.	Dated by Mr. Conrad,	1832
" subovatus Lea.	" "	1832
" arcæformis Lea.	" "	1832
" pileus Lea.	" "	1832
" trigonus Lea.	" "	1832
" subrotundus Lea.	" "	1832

Published in memoir (supplement) read before and deposited with the Am. Phil. Soc., May 20th, 1831, and printed in Trans. v. 4, p. 105. This supplement was issued with the memoir. Therefore all these dates of Mr. Conrad's are one year after the memoir was distributed.

				Published in memoir read before and depos- ited with the Am. Phil. Soc., March 16th, 1832, and printed in Trans., v. 5, p. 23. I was ab- sent most of 1832 in Europe, and the large number of plates (19) with figures of 86 spe- cies, in this and the two following supplé- ments, all colored, re- quired much time, and it was not until some time in Aug. or Sep. 1834 that the whole was finished and issued printed.
Unio globosus Lea.	Dated by Mr. Conrad,	1834		
" capsæformis Lea.	" "	1834		
" Haysianus Lea.	" "	1834		
" Ravenelanus Lea.	" " Aug.	1834		
" Schoolcraftensis Lea.	" "	1834		
" geometricus Lea.	" "	1834		
Anodonta plana Lea.	" " Aug.	1834		
" incerta Lea.	" "	1834		
				Supplement read be- fore and deposited with the Am. Phil. Soc., March 15th, 1833, and printed in Trans. v. 5, p. 59. The same obser- vations apply as to the preceding.
Unio Conradicus Lea.	Dated by Mr. Conrad	1834		
" Cooperianus Lea.	" "	1834		
" dromas Lea.	" "	1834		
" perdix Lea.	" "	1834		
" pictus Lea.	" "	1834		
" Sowerbyanus Lea.	" "	1834		Second supplement read before and depos- ited with the Am. Phil. Soc., Feb. 7th, 1834, and printed in Trans. v. 5, p. 95. The same observations apply as to the preceding.
" Troostensis Lea.	" "	1834		
Unio fulvus Lea.	Dated by Mr. Conrad,	1834		
" Shepardianus Lea.	" "	1834		
" confertus Lea.	" " Aug.	1834		Published in memoir read before and depos- ited with the Am. Phil. Soc., Dec. 19th, 1834, and printed in Trans. v. 6, p. 1. All these are inserted in the first edition of my Synopsis, issued in 1836, prob- ably in Dec.
" modioliformis Lea.	" "	1834		
Unio arcticus Lea.	Dated by Mr. Conrad,	1838		
" coccineus Lea.	" "	1838		
" Fisherianus Lea.	" "	1838		
" Hydianus Lea.	" "	1838		
" jejunus Lea.	" "	1838		
" interruptus Lea.	" "	1838		
" turgidus Lea.	" "	*1837		Published in memoir read before and depos- ited with the Am. Phil. Soc., Feb. 5th, 1836, and printed in Trans. v. 6, p. 23. All these are inserted in the first edition of my Synopsis, issued in 1836, prob- ably in Dec.
" venustus Lea.	" "	1838		
Unio Barnesianus Lea.	Dated by Mr. Conrad,	1838		
" Cumberlandianus Lea.	" "	1838		
" folliculatus Lea.	" "	1838		
" glaber Lea.	" "	1838		
" Jayensis Lea.	" "	1838		
" Lecontianus Lea.	" "	1838		
" Muhlfeldianus Lea.	" "	1838		
" notatus Lea.	" "	1838		
" pumilis Lea.	" "	1838		
" Medellinus Lea.	" "	1838		
" Roanokensis Lea.	" "	1838		
" simus Lea.	" "	1838		
" Hopetonensis Lea.	" "	1838		
" Vanuxemensis Lea.	" "	1838		
" Zieglerianus Lea.	" "	1838		
Anodonta Wardiana Lea.	" "	1838		

* I cannot understand why Mr. Conrad dates this one year prior to the other species in the same memoir. In his Synopsis he makes it a synonym to *Mortoni* Con., which he described in

Unio pliciferus Lea. Dated by Mr. Conrad,	1838	{	Published in Memoir read before and deposited with the Amer. Phil. Soc., July 15th, 1836, and printed in Trans. Vol. 6. Issued in Synopsis, 1836.
Margaritana arcuata Lea. Dated by Mr. Conrad,	1838		
Unio discus Lea. Dated by Mr. Conrad,	1838	{	Published in Memoir read before and deposited with the Amer. Phil. Soc., Aug. 19th, 1836, and printed in Trans. Vol. 6. Issued in Synopsis, 1836.
“ Dorfeuillianus Lea. Dated by Mr. Conrad,	1838		
“ Menkeanus Lea. “ “	1838		
Unio Rangianus Lea. Dated by Mr. Conrad,	1838	{	Published in Memoir read before and deposited with the Amer. Phil. Soc. July 21st, 1837, and printed in Trans. Vol. 6. Issued in Synopsis, 1836.
Unio amœnus Lea. Dated by Mr. Conrad,	1841		
“ biangulatus Lea. “ “	1841	{	Published in Memoir read before and deposited with the Amer. Phil. Soc., Oct. 2d, 1840. Oct. 16th ordered to be printed. Issued in the Proceedings of that month, (No. 13, p. 285,) which was laid on the table by the Reporter, Nov. 6th, 1840. Printed in the Trans. Vol. 8, p. 191.
“ Bournianus Lea. “ “	1841		
“ Boydianus Lea. “ “	1841		
“ Cincinnatensis Lea. Dated by Mr. Conrad,	1841		
“ cuneolus Lea. “ “	1842		
“ dactylus Lea. “ “	1841		
“ dollabelloides Lea. “ “	1842		
“ Edgarianus Lea. “ “	1841		
“ exiguus Lea. “ “	1842		
“ Geddingsianus Lea. “ “	1841		
“ Holstonensis Lea. “ “	1841		
“ lenior Lea. “ “	1841		
“ Lesueurianus Lea. “ “	1842		
“ lineatus Lea. “ “	1841		
“ incrassatus Lea. “ “	1842		
“ plenus Lea. “ “	1842		
“ striatus Lea. “ “	1841		
“ strigosus Lea. “ “	1841		
“ Tennesseensis Lea. “ “	1842		
“ tener Lea. “ “	1842		
“ tortivus Lea. “ “	1842		
“ tuberosus Lea. “ “	*1842		

*It will be observed that Mr. Conrad continues the singular error of frequently dating my species of the *same memoir* in different years, while some of them in the same memoir he inserts without a date, viz.: *Stonensis*, *subangulatus*, *obesus*, &c.

Unio Brumbyanus* Lea. Dated by Mr. Conrad, 1841	}	Published in Memoir read before and deposited with the Amer. Phil. Soc. June 18th, 1841. Issued in Proceedings, No. 19, for October, 1841. These dates of Mr. Conrad's are therefore correct.
“ regularis Lea. “ “ 1841		
“ mæstus Lea. “ “ 1841		
“ sparsus Lea. “ “ 1841		
“ argenteus Lea. “ “ 1841		
Unio amygdalus Lea. Dated by Mr. Conrad, 1846	}	Published in Memoir read before and deposited with the Amer. Phil. Soc. Aug. 18th, 1843. Permission given by the Society to print the descriptions. They were printed and issued the following day, Aug. 19th, 1843. Receipt of these printed descriptions acknowledged by the Society Sept. 15th, 1843. Therefore six of these are dated by Mr. Conrad <i>three years</i> after they were printed and issued!!
“ Buckleyi Lea. “ “ 1846		
“ Buddianus Lea. “ “ 1846		
“ fuscatus Lea. “ “ 1846		
“ minor Lea. “ “ 1846		
“ Monroensis Lea. “ “ 1841		
“ neglectus Lea. “ “ 1846		
Anodonta tetragona Lea. Dated by Mr. Conrad, 1846	}	Published in Memoir read before and deposited with the Amer. Phil. Soc. May 2, 1845. Printed descriptions issued in the Proceedings of that month, No. 33, p. 165, issued Aug., 1845. Generally the new species of this memoir are dated correctly (in 1845) by Mr. Conrad. The <i>tetragona</i> is one year wrong, and <i>M. minor</i> has no date.

In my last Memoir read before and deposited with the American Philosophical Society, March 5th, 1852, there are over fifty descriptions of new species. Two of these Mr. Conrad has omitted, viz.: *U. Oregonensis* Lea, and *U. succissus* Lea. Twelve he inserts without date; the remainder are dated correctly,—1852.

This finishes the corrections of the numerous *errors of date* in Mr. Conrad's Synopsis, as regards the long series of my memoirs in the Trans. Am. Phil. Soc. It will be seen by the above tables of corrections, that he has, under his own rule of the time of issuing them printed, erroneously dated *about ninety of my species*. I do not pretend in this rectification to correct the *synonymy* of the

* At page 245 of Mr. Conrad's Synopsis in "Proceedings," this is given as a species; at p. 250 it is made a synonym to *glans* Lea.

Synopsis, as I have stated before. It would require too much space and time. Those interested in the subject must judge between the two synopses. I have certainly seen nothing in Mr. Conrad's to induce me to change the synonymy of mine. I shall be at all times most willing to render my own more perfect by corrections founded on fact.

Mr. Conrad gives precedence to claims on various principles. Sometimes he gives the priority of manuscript names in letters or labels, to printed descriptions and figures, as in the case of *Unio coccineus*, which I described and figured in the Trans. Am. Phil. Soc. (Dec. 19, 1834). He inserts it in his Synopsis "*Unio coccineus*, Hildreth, MSS." Certainly I never intended to deprive my old and excellent correspondent Dr. Hildreth of any credit due to his long and ardent services in the development of the Natural History of the Valley of the Ohio. He sent it to me with many others in June 1833. There were two shells which he thought to be new, and the names he proposed were *U. coccineus* and *Alasmodonta obscura*. I had previously received the latter from him and named it in honor of him (*Unio Hildrethianus*), and communicated it to the American Philosophical Society. I adopted his proposed name for the first, as I am always accustomed to do, if it be appropriate, and called it *coccineus*. I also stated that it was the name proposed in his letter to me. I put *Hildrethianus* among the *Uniones* because it belonged to a peculiar group, by form and habit, which were classed as *Uniones*. Mr. Conrad, while he gives the name of *U. coccineus* to Hildreth, objects to my retaining the name of *plicatus* as Lesueur's, instead of giving it to Mr. Say as he does. It seems to me that the cases are entirely different. Mr. Lesueur gave the shell to Mr. Say with its name *plicatus*, as a new species. Mr. Say considered it as *only an undulated variety* of his *crassus*, pointing out that variation, and at same time said, that, "it is most probably a distinct species, and if so, the designation proposed by its accomplished discoverer, '*plicata*,' will be an excellent one." *He did not describe it*, and I believe all the conchological writers of the time accredited it to Lesueur, viz. Barnes, Rafinesque, Short and Eaton, Hildreth, &c. It was, subsequently to Mr. Say's notice, described by Barnes in Silliman's Journal, and accredited to Lesueur—Say's name following Lesueur's. It was then universally received as *plicatus* Lesueur, and is still known as such. Although neither he nor Mr. Say described it, it is better to retain its established authorship. If it be not retained as Lesueur's it must be given to Barnes, who was really the first to publish a description of it.

The same want of stability of plan displays itself in the authorship of *U. paliatus* from South Carolina. Dr. Ravenel sent me this species labelled by himself with this name. Believing that he meant to publish a description of it himself, I quoted it in my Synopsis, first edition, 1836, accrediting it to him, and so continued it in the 2d and 3d editions. Mr. Conrad, on the contrary, accredits it to me, and refers to the page of my Synopsis where I insert the species as Ravenel's, and he adds to this error by quoting for it the Trans. Am. Phil. Soc. vol. x. page 79, pl. 7 fig. 20 where it will not be found, but quite a different species, the *U. pallescens* Lea, which, at p. 254 of the Proceedings, in his Synopsis, he inserts as a distinct species. I never described *paliatus*, nor claimed it in any way. It never has been described, I believe, but having been so long known as *paliatus* of Ravenel, I hope it will be continued as such. I have no desire to have my name attached to any species which I have not been the first to describe.

Regarding the "notes" on several species at the end of Mr. Conrad's synopsis, having long since given my opinion respecting *U. complanatus*, Solander, *U. obliquus* Lam. and most of the others, I shall not repeat these opinions; but I am glad to see in a note on *cariosus*, Say, (p. 264,) that he has at last done justice to Lamarck in acknowledging his *luteolus*. In this note he says he followed Ferussac in referring *luteolus* to that species, but that his "description does not apply. It very well describes *U. siliquoides* Barnes." I stated in 1833 that, having examined Lamarck's specimen of *luteolus* in Paris, I found it to be a true *siliquoides* Bar., and therefore have ever since given *luteolus* priority, as I was bound to do, in common justice. But notwithstanding that Lamarck

"very well describes the *U. siliquoides* Barnes," (under the name of *luteolus*) as Mr. Conrad states, and that I had mentioned (Trans. 1833) having seen the specimen itself in Paris, still Mr. Conrad, in 1834, places *luteolus* Lam. as a synonym to *cariosus*, Say; and in 1836, changing *siliquoides* Bar. into a type, he says he would have adopted *luteolus* Lam., if Ferussac had not referred Lamark's specimen of *luteolus* to *cariosus*, Say. Thus relying more on Ferussac's opinion (whom I found really not very well acquainted with our species) than to his own judgment on studying a description, which did apply; or, on mine, to confirm it, who had examined the original carefully. Now in 1853, he comes to the conclusion that *U. luteolus* Lam. = *U. siliquoides* Bar., exactly what I stated twenty years ago in the Trans. Am. Phil. Soc. vol. 5, p. 91.

The note on *U. viridis* Raf. (p. 266) may be answered by saying that in describing *U. Tappanianus*, I did not then believe, nor do I now, that it is the shell Rafinesque had before him when he wrote his description. He does not allude to the striking peculiarity of the teeth of *Tappanianus*, and he says his shell is "common in the Kentucky and the small rivers adjacent." The *Tappanianus* is supposed not to exist in the west. The reason that I did not retain the name of *viridis* and give it to Mr. Conrad as he suggests, was that I did not believe that he and Rafinesque described the same shell, and I did not wish to use the names of the latter.* The fact stated by Mr. Conrad, that the specimen was labelled by Rafinesque himself as the *U. viridis*, and that its habitat was the Kentucky river, ought to have satisfied him that it was one of the numerous errors of Rafinesque.† That there is an error in the habitat or the name, there is no doubt. Mr. Say, in his Synopsis, with the advantage of comparing this specimen labelled by Rafinesque, declares it to be his *cariosus*! This affords another of the very many difficulties attending the attempt to substantiate Mr. Rafinesque's species. It has been the cause of the loss of an immense deal of time among naturalists, and it would have been better for Natural History if he was entirely "considered to be destitute of authority and entirely unworthy of notice," as Dr. Binney years ago concluded.

As regards the note on *obliquus* Lam. (p. 265), Mr. Conrad suggests that I considered *undatus* Bar. a synonym, because Mr. Barnes gave it with a mark of doubt. Mr. Conrad does not advert to the fact that I had seen the original specimen in Paris in 1832, and that I had published my note of it on my return.

In his note on *U. fasciolus* Raf. (p. 267) he says that the specimen was labelled by Rafinesque. Notwithstanding this it was not admitted by him in his Synopsis of 1834 at all! But Mr. Say introduced it in his Synopsis with *multiradiatus* Lea, as a synonym, which (*multiradiatus*) Mr. Conrad had admitted as a good species. In 1836, however, Mr. Conrad in his Monography, introduced *fasciolus* Raf., and then degraded *multiradiatus* as its synonym. Now in 1853 he makes *multiradiatus* a synonym to *ligamentinus* Lam., and *fasciolus* is made to appropriate *subangulatus* Lea, as a synonym, which was described in Trans. 1840 in vol. 8th not 10th as quoted by Mr. Conrad.

I am gratified to see (p. 266) that *U. trigonus* Lea, after twenty years denial, is acknowledged to be a distinct species. In Mr. Conrad's Synopsis, 1834, he made it a synonym to *undatus* Bar., as Mr. Say also did in his Synopsis. My own label on the specimen given by me to the Academy at the time, was superseded for years by Barnes's name of another shell. There never was any doubt in my own mind about it, after I had given it a proper examination.

I object to Mr. Conrad's changing my name *Unio Moussonianus*, named after Prof. Mousson, to *Moussianus*, and that of *Estabrookianus*, named after Prof. Estabrook, to *Eastbrookianus*, as well also *Margaritana Vandenbuschiana*, named after Dr. Vandenbusch, to *Buschiana*.

* My having done so in the *U. interruptus* and one or two others was entirely an oversight and unintentional. I always intended to avoid using Rafinesque's names.

† In a letter from the late Dr. Ward, of Chilicothe, 1836, he says in regard to this species, "that is another of Professor Rafinesque's apocryphal tales."

Some of my species seem to be entirely omitted in this Synopsis. I do not observe *U. aheneus*, *U. occultus*, *U. Oregonensis*, *U. patulus*, *U. pressus*, *U. succissus*, *U. multiplicatus* (nor *heros* Say), *Anodonta Dunlapiana* nor *An. globosa*. In a note on *cuneatus* Raf. (p. 267), Mr. Conrad says it is a form between *U. patulus* and *U. clavus*, but he does not place *patulus* Lea, in his list of species, although in his Monography in 1838 he acknowledges it with a description and figure.

At page 258 Mr. Conrad gives "*U. tenerus* Ravenel, Lea, 1834, V. 63, 9, 2." I never described nor figured this shell, and there is no reference to it in vol. 5, Trans. at p. 63, nor is it figured in plate 9. *U. teneris* Ravenel and *U. paliatus* Ravenel, are most singularly erroneous in their introduction. They have both been well known under Dr. Ravenel's names by his kindly distributing them. Having himself named them when he sent them to me, I distributed duplicates at home and abroad with his names. Although he did not describe them subsequently, as I supposed he would, I still retained his names in my editions of the Synopsis and quoted the authorship to him. Mr. Conrad, by not keeping to a strict rule, gives in his Synopsis one (*paliatus*) to me and the other (*tenerus*) to Ravenel. To add to this error he refers to my memoirs for both of them, quoting the page of text and the plates for figures, where they never have appeared at all!

I trust that I have vindicated the dates of my species by references to the facts regarding them. This defence has cost me much time in searching for the proofs necessary to rebut the errors of this Synopsis, and I think it will not be denied that it is effectually done.

The Recording Secretary read his Annual Report, as follows :

REPORT

OF THE RECORDING SECRETARY

For 1854.

During the past year twenty-eight Members and eighteen Correspondents have been elected. One has resigned.

Four have died, to wit: Mr. John Speakman, one of the Founders of the Academy; Octavius A. Norris, Esquire; Robert M. Patterson, M.D.; and Jacob G. Morris, Esquire, who was lost with the steamship Arctic.

During the same period sixty-four papers have been read before the Society, intended for publication in their Journal or Proceedings:

By Spencer F. Baird, two, to wit: 1. Descriptions of new species of North American Ranæformes and Hylæformes in the Museum of the Smithsonian Institution. 2. Descriptions of new Birds, collected between Albuquerque, New Mexico, and San Francisco, Ca., &c.

By Spencer F. Baird and Charles Girard, two, to wit: 1. Descriptions of new species of Fishes collected in Texas, New Mexico, and Sonora, by Mr. John D. Clark, on the U. States and Mexico Boundary Survey, and in Texas by Captain Stewart Van Vliet, U. S. A., second part. 2. Notice of a new genus of Cyprinidæ.

By John Cassin.—Synopsis of the Falconidæ which inhabit America north of Mexico, with descriptions of new species.

By T. A. Conrad, six, to wit: 1. Monograph of the genus *Argonauta*, with descriptions of five new species; published in the Journal. 2. Synopsis of the genus *Cassidula* and of a proposed new genus *Athleta*. 3. Omissions and corrections to a Synopsis of the North American Naiades. 4. Synopsis of the genera *Parapholas* and *Penicilla*; published in the Journal. 5. Rectification of the generic names of Tertiary Fossil Shells. 6. Notes on Shells, with descriptions of three recent and one fossil species.

By Lieut. D. M. Couch, U. S. Army.—Notes on Birds observed in Texas and

in the States of Nueva Leon, Tamaulipas and Coahuila, Mexico, with descriptions of new species.

By James D. Dana.—Catalogue and descriptions of Crustacea, collected in California by Dr. John L. Le Conte.

By J. W. Dawson.—On Fossil Coniferous Wood from Prince Edward's Island.

By Wm. Dudley.—Description of a species of Crane found in Wisconsin, presumed to be new.

By Elias Durand and Theodore C. Hilgard, M.D.—Plantæ Heermannianæ Californicæ; Descriptions of new Plants collected in South California by Dr. A. L. Heermann, Naturalist attached to the Survey of the Pacific Railroad route, under Lieut. R. S. Williamson, U. S. Army, with remarks on other plants heretofore described, belonging to the same collection. Published in the Journal.

By John Evans, M.D., and B. F. Shumard, M.D., three, to wit: 1. Descriptions of new Fossil species from the Cretaceous Formation of Sage Creek, Nebraska. 2. Additions to a former Paper, containing descriptions of new fossil species from Nebraska. 3. Descriptions of new fossil species from the fresh water Tertiary formation of Nebraska.

By W. P. Gibbons, M.D., two, to wit: 1. Descriptions of four new species of Viviparous Fishes from Sacramento River and the Bay of San Francisco; read before the California Academy of Natural Sciences, Monday, May 15th, 1854. 2. Descriptions of new species of Viviparous marine and fresh water Fishes, from the Bay of San Francisco and from the River and Lagoons of the Sacramento; read before the California Academy of Natural Sciences, January 9th, 1854.

By Charles Girard, nine, to wit: 1. On a new Entomostracan, of the family Limnadiæ, inhabiting the western waters. 2. Notice of a new species of Salmonidæ from the north-eastern part of the United States. 3. A list of the North American Bufonids, with diagnoses of new species. 4. Descriptions of new Fishes collected by Dr. A. L. Heermann, Naturalist attached to the Survey of the Pacific Railroad route, under Lieut. R. S. Williamson, U. S. Army. 5. Continuation of a former Paper, describing Fishes collected by Dr. A. L. Heermann. 6. Enumeration of the species of Marine Fishes collected at San Francisco, Cal., by Dr. C. B. R. Kennerly, Naturalist attached to the Survey of the Pacific Railroad route, under Lieut. A. W. Whipple, U. S. Army. 7. Observations on a collection of Fishes made on the Pacific coast of the United States, by Lieut. W. P. Trowbridge, U. S. Army, for the Museum of the Smithsonian Institution. 8. Characteristics of some Cartilaginous Fishes of the Pacific coast of North America. 9. Abstract of a Report of Lieut. James M. Gilliss, U. S. Navy, upon the Fishes collected during the U. S. Naval Astronomical Expedition to Chili.

By Edward Hallowell, M.D., six, to wit: 1. Descriptions of New Reptiles from California. 2. On a new genus and species of Serpents from Honduras, presumed to be new. 3. Remarks on the Geographical Distribution of Reptiles, with descriptions of several species supposed to be new, and corrections of former Papers. 4. Contributions to South American Herpetology. 5. Notices of new Reptiles from Texas. 6. New Reptiles from the coast of Guinea.

By A. L. Heermann, M.D.—Additions to North American Ornithology.

By J. E. Holbrook, M.D.—Descriptions of Fishes of Florida. Published in the Journal.

By Joseph Jones.—Abstract of Experiments upon the Physical Influences exerted by living organic, and inorganic Membranes upon Chemical Substances passing through them by Endosmose.

By Alfred T. King, M.D., three, to wit: 1. On the Ancient Alluvium of the Ohio River and its tributaries. 2. Descriptions of fossil Trees in the Coal Rocks near Greensburg, Westmoreland Co., Pa. 3. Description of fossil Fruit found in the Carboniferous Rocks of Beaver Co. Pa.

By Isaac Lea.—Rectification of Mr. T. A. Conrad's "Synopsis of the family of Naiades of North America," published in the Proceedings of the Academy of Natural Sciences of Philadelphia, February, 1853.

By John Le Conte, F.L.S., three, to wit: 1. Notice of American Animals for-

merly known, but now forgotten or lost. 2. Observations on the *Vespertilio leporinus* of Linnæus. 3. Descriptions of four new species of *Kinosternum*.

By John L. Le Conte, M.D., ten, to wit: 1. Descriptions of new Coleoptera from Texas, chiefly collected by the U. S. Boundary Commission. 2. Descriptions of some Coleoptera from Oregon, collected by Dr. J. G. Cooper, &c., &c. 3. Synopsis of the *Edemeridæ* of the United States. 3. Note on the genus *Amblychila*, Say. 5. Synopsis of the species of *Platynus* and allied genera, inhabiting the United States. 6. Synopsis of the *Cuculidæ* of the United States. 7. Notice of some new Coleopterous Insects, from the collections of the U. S. and Mexican Boundary Commission. 8. Synopsis of the *Dermestidæ* of the United States. 9. Synopsis of the *Byrrhidæ* of North America. 10. Synopsis of the *Erotylidæ* of the United States.

By Joseph Leidy, M.D., five, to wit: 1. On *Bathygnathus borealis*, an extinct Saurian of the new Red Sandstone of Prince Edward's Island; published in the Journal. 2. Synopsis of extinct Mammalia, the remains of which have been discovered in the Eocene formation of Nebraska. 3. Description of a Fossil apparently indicating an extinct species of the Camel tribe. 4. On *Urnatella gracilis* and a new species of *Plumatella*. 5. Notice of some fossil Bones discovered by Mr. Francis A. Linke, on the banks of the Ohio River, Indiana.

By Joseph G. Norwood and Henry Pratten, two, to wit: 1. Notice of *Producti* found in the Western States and Territories, with descriptions of twelve new species; published in the Journal. 2. Notice of the genus *Chonetes*, as found in the Western States and Territories, with descriptions of eleven new species; published in the Journal.

By M. Tuomey.—Descriptions of some new Fossils from the Cretaceous rocks of the Southern States.

During the same period the By-Laws have been amended as follows:

Chap. VIII., Art. 1.—Strike out "Any Specimen belonging to the Academy and not presented under restrictions, may be loaned to members or correspondents for purposes of scientific investigation by the consent of three-fourths of the Curators, and for a period not exceeding three months; any person to whom specimens may be loaned shall first deposit with the Curators a sum, not less than fifty dollars, in cash, which they may deem necessary to ensure the safe return of the specimen, and he shall be subject to a fine equal in amount to one-third of the security given, for each month that the specimen may be retained beyond the time specified for its return. The specimen loaned, together with the date at which its return may be due, shall be reported to the Academy by the Curators at the meetings for Business in March, June, September and December."

And insert: "No specimen of Natural History contained in the collections of the Academy, shall be loaned from the Hall under any pretence or for any purpose whatsoever."

Chap. XII., Art. 2.—Strike out "No alterations shall be made in these By-Laws unless they be proposed in writing at a meeting for business, lie on the table for one month, and be sanctioned by the affirmative votes of two-thirds of the subsequent meeting for business, at least twelve members being present."

And insert: "Every proposition to alter or amend these By-Laws shall be submitted in writing at a meeting for business; and, if adopted by the affirmative votes of two-thirds of the members present, it shall be read at the meeting for business next succeeding, when, if adopted by the affirmative votes of two-thirds of the members present, it shall be again read at the next succeeding meeting for business, when, on receiving the affirmative votes of two-thirds of the members present, it shall become a part of these By-Laws; provided, that at least twelve members be present at each of the three meetings."

Chap. XII.—A new article added, as follows:

Art. III.—No one or more of the By-Laws of this Academy shall be suspended.

All of which is respectfully submitted, by

B. HOWARD RAND,

Recording Secretary.

The Librarian read the following

REPORT FOR 1854.

During the present year 729 additions have been made to the Library, 146 of which are in volumes, 446 in parts or numbers, and 137 in pamphlet form. Nearly all are works on Natural Science, in its various departments, or Journals, Transactions, Memoirs, &c., of learned Societies, foreign and domestic, with many of which the Academy is in correspondence or exchange. The subjoined list exhibits the subjects embraced in the contributions of this year:

	Volumes.	Parts or Nos.	Pamphlets.
Natural Sciences, - - - -	59	62	63
Anatomy and Physiology, - - -	6	11	15
Journals, Trans., Proceedings, &c., of Societies, -	63	369	
Physical Science and Chemistry, - - -	3	3	17
Voyages and Travels, - - - -	9		2
Biography, - - - -	1		3
History, - - - -	1		
Miscellaneous, - - - -	4	1	37
	146	446	137

Of these, Authors have contributed 94; Editors 70; Societies, Corporations, &c., 228; Dr. Wilson 291; other members, correspondents and individuals 43; and the U. S. Government 3; Total 729.

WM. S. ZANTZINGER, Librarian.

Hall of the Academy, December 26, 1854.

The Report of the Treasurer for 1854 was read and referred to the Auditors.

Dr. Leidy, on behalf of the Curators, read the following

REPORT OF THE CURATORS FOR 1854.

The alterations and enlargement of the building of the Academy commenced in 1853, and found necessary to accommodate the increasing museum and library, have so far advanced, that in a few more months they will be completed. In the new museum room, arrangements of a portion of the cabinet are already begun, but the Curators propose deferring, until the next annual report, a detailed account of the improvements in the building and the re-arrangements of the museum and library.

During the year just about closing, the donations to the museum have been as follows:

Mammalia.—Of this class 57 specimens of 42 species have been presented. Among them is a noble specimen of an Elk, *Cervus Americanus*, shot in this State, and presented by a number of our members.

Birds.—A small but valuable collection of bird-skins from Honduras, was presented by Dr. S. Woodhouse. There were also 12 species of birds presented by different members.

Reptiles.—A collection of 10 species from Central America, and 16 species chiefly from Texas and New Mexico, was presented by Dr. Woodhouse; a second collection of 18 species from California, by Dr. Heermann; a third collection of 9 species from the Gaboon country, Africa, by M. Belloni Duchailu; and a fourth collection of 9 species from New Jersey, by Mr. S. Ashmead. Besides these, various persons presented 16 species of reptiles.

Fishes.—Dr. Heermann presented a collection of 18 species from California, and various members and others presented 12 species.

Mollusks.—Dr. Albers, of Berlin, through Mr. Lea, presented a collection of 70 species of land shells, chiefly from Madeira; Dr. Le Conte presented a valuable collection of marine shells from the Sandwich Islands; and Lieut. G. H. Hare presented a collection of marine shells from the Mediterranean and other localities. Besides these collections, numerous specimens of 16 species were presented by various persons.

Insects.—To this class we have obtained an unusually rich accession. John A. Guex, Esq., has presented to the Academy his entire cabinet of entomology, consisting of 1500 specimens of American and European Lepidoptera, and nearly 17,000 species of Coleoptera, systematically arranged in accordance with modern nomenclature, and nearly all catalogued. Other persons have presented about 20 species of insects.

Crustaceans, arachnides, myriapods, annelides and zoophytes.—Of these classes of animals, numerous specimens of twelve species have been presented by various members.

Comparative Anatomy.—2 skeletons, 5 crania, and 2 other anatomical specimens were presented. One of the skeletons, that of a dog, was presented by Mr. Lambert, the other, that of a Heterodon, was presented by Dr. Hallowell.

Botany.—A collection of plants from New Holland and the Azores was presented by Mr. R. Kilvington; and a collection of 100 specimens from California, by Mr. Henry Pratten, of New Harmony. Besides these, 12 species of plants, fruits, &c., were presented by different persons.

Palæontology.—A collection of fossils from San Pedro, Santa Barbara, and the Colorado Desert, was presented by Dr. Heermann; a second from the south of Europe, by Lieut. G. H. Hare; a third of cretaceous fossils from Dallas co., Texas, by Mr. A. Gouhenaut; and a fourth of cretaceous fossils from Alabama, and eocene fossils from Virginia, by Mr. Joseph Jones. Besides these collections, fifty specimens of fossils were presented by different members and other persons. Among the specimens are five of the tracks of the huge extinct *Brontozoum giganteum*, in sandstone, from Connecticut, presented by Dr. T. D. Mütter, and several fragments of Indian crania and teeth, encrusted with carbonate of lime, from a cave in California, presented by Dr. W. H. Houston.

Mineralogy.—A collection of 40 specimens of metallic ores from Peru was presented by Dr. S. W. Mitchell; and 70 other specimens of minerals from various localities, were presented by different members and others.

This report is respectfully submitted for the acceptance of the Academy by

JOSEPH LEIDY,
Chairman of the Curators.

The following resolution was offered by Mr. Isaac Lea, and unanimously adopted:

Resolved, That a Committee be appointed to draft a memorial to Congress, urging the sending out of an Expedition for the relief of our fellow member, Dr. Kane, and his companions in the Arctic Regions.

The following Committee was appointed: Mr. Isaac Lea, Dr. Zant-zinger and Dr. Bridges.

On motion, the Committee was instructed to report at next meeting.

The Society then proceeded to elect Officers and a Publication Committee for 1855, with the following result:

<i>President,</i>	-	-	-	-	-	GEORGE ORD.
<i>Vice Presidents,</i>	-	-	-	-	-	Robert Bridges, Isaac Lea.
<i>Corresponding Secreta</i>	-	-	-	-	-	John L. Le Conte.

<i>Recording Secretary,</i>	-	-	-	-	B. Howard Rand.
<i>Librarian,</i>	-	-	-	-	Wm. S. Zantzinger.
<i>Treasurer,</i>	-	-	-	-	George W. Carpenter,
<i>Curators,</i>	-	-	-	-	Joseph Leidy, William S. Vaux, Samuel Ashmead, John Cassin.
<i>Auditors,</i>	.	-	-	-	Robert Pearsall, Samuel Ashmead, James C. Fisher.
<i>Publication Committee,</i>	-	-	-	-	William S. Vaux, Robert Bridges, Isaac Lea, H. Cooper Hanson, Joseph Leidy.

ELECTION OF MEMBERS.

Dr. William Freeman, and Dr. William H. Hooper, of Philadelphia, were elected *Members*.